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

Ph: 98665 76663
Email: office@adityapharmacy.edu.in
Website: www.adityapharmacy.edu.in

B. PHARMACY		
S.No	**Name of the course that include experiential learning through Project work/ Internship/Field work**	**Page No**
1	B134104-Hospital and Community Pharmacy	4
2	B133204-Medicinal Chemistry-III	11
3	B132202-Pharmaceutical Analysis-I	17
4	B134201-Biopharmaceutics and Pharmacokinetics	24
5	B133203-Pharmacology-II	30
6	B132201-Pharmaceutical Unit Operations-II	36
7	B133201-Pharmaceutical Technology-II	42
8	B134203-Controlled Released and Novel Drug Delivery Systems	50
9	B132204-Medicinal Chemistry-I	56
10	B132102-Pharmacognosy-I	62
11	B13104-Human Anatomy and Physiology-I	68
12	B132203-Pharmacognosy-II	74
13	B134101-Pharmaceutical Analysis-II	80
14	B132104-Pharmaceutical Microbiology	86
15	B13201-Pharmaceutical Inorganic Chemistry	92
16	B134204-Quality Assurance , GMP and GLP	95
17	B133105-Pharmaceutical Management	98
18	B13202-Physical Pharmacy-I	101
19	B13106-Pharmaceutical organic chemistry-1	104
20	B13205-Pharmaceutical Organic Chemistry-II	107
21	B132205-Health education and Pathophysiology	110

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

48	T3103-Pharmacotherapeutics-II	218
49	T4107-Pharmacotherapeutics-III (Practical)	223
50	T2104-Pharmacology-I	228

ADITYA PHARMACY COLLEGE
SURAMPALEM - 533437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

IV Year –I SEMESTER

T	P	C
3+1	0	4

HOSPITAL & COMMUNITY PHARMACY

UNIT-I

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 COUNSELLING, role of pharmacist in community health care and education.

UNIT-II

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

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.

UNIT-IV

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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

- 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

Communication skills - communication with prescribers and patients

Over-the-counter (OTC) Drugs

- 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

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).

Text Books

1. Hospital Pharmacy - Hassan WE. Lee and Febiger publication.
2. Textbook of hospital pharmacy - Aliwood MC and Blackwell. Reference books (Latest editions)
3. Avery's Drug Treatment, 4th Edn, 1997, Adis International Limited.
4. Remington Sciences and Practice of Pharmacy, 21st edition.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"FORMULATION AND EVALUATION OF DICLOFENAC SODIUM BY SUBLIMATION TECHNIQUE"

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

BY:

Ad.Elfan Majeed (133G1R0001)

B.Mamatha (133G1R0003)

B.Deepthi Lakshmi(133G1R0005)

CH.D Subrahmanyeswari(133G1R0006)

CH.Sai Krishna Sumanth(133G1R0007)

Under the guidance of,

Miss. VUDIKALA PARIMALA, M.Pharm

Asst. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surrampalem-533437

2013-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled **"Formulation and Evaluation of Diclofenac Sodium by Sublimation Technique** submitted to the JNTU-K University,Kakinada, in partial fulfilment of the requirements for the award of the degree of **Bachelor of Pharmacy** is a record of original research work carried out by Ad.Elfan Majeed (133G1R0001), B.Mamatha (133G1R0003), B.Deepthi Lakshmi (133G1R0005), CH.D Subrahmanyeswari (133G1R0006), CH.Sai Krishna Sumanth (133G1R0007) under the supervision of **Miss.Vudikala Parimala** and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Dr.K.Divakar, M.Pharm, Ph.D

Principal and Professor
Aditya Pharmacy College

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

Place: Surampalem

Date: 30-3-2017

ADITYA PHARMACY COLLEGE SURAMPALEM

Internal Examiner

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled **"Formulation and Evaluation of Diclofenac Sodium by Sublimation Technique** submitted to the JNTU-K University,Kakinada, in partial fulfilment of the requirements for the award of the degree of **Bachelor of Pharmacy** is a record of original research work carried out by Ad.Elfan Majeed (133G1R0001), B.Mamatha (133G1R0003), B.Deepthi Lakshmi (133G1R0005), CH.D Subrahmanyeswari (133G1R0006), CH.Sai Krishna Sumanth (133G1R0007) under the supervision of **Miss.Vudikala Parimala** and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Dr.K.Divakar, M.Pharm, Ph.D

Principal and Professor

Aditya Pharmacy College

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

Aditya Pharmacy College

Place: Surampalem

Date: 30-3-2017

Internal Examiner

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled **"Formulation and Evaluation of Diclofenac Sodium by Sublimation Technique"**, was carried out in the Department of Pharmaceutics under the guidance of Miss.Vudikala Parimala, M.Pharm, Aditya Pharmacy College. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places and it has been previously not submitted to any other University of Academic Institution for any higher degree.

Ad.Elfan Majeed	**(133G1R0001)**	A. Elfan Majeed.
B.Mamatha	**(133G1R0003)**	B. Mamatha
B. Deepthi Lakshmi	**(133G1R0005)**	B. Deepthi Lakshmi
CH.D Subrahmanyeswari	**(133G1R0006)**	CH.D Subrahmanyeswari
CH.Sai Krishna Sumanth	**(133G1R0007)**	Ch. Sai Krishna Sumanth

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

apter 6: Results

his chapter all the results were presented in the form of tables, graphs and figures.

CONCLUSION

e ultimate goal of formulation of Diclofenac sodium fast dissolving tablets is to get optimal atment with maximal safety. Compared with sustained release formulation immediate release rmulation avoids dose dumping and allows fast onset of action, which has the advantage of eater convenience and potentially improved compliance. This can be reasonably complished by development of tablets using super disintegrant.

n the present investigation, an attempt was made to develop immediate release of Diclofenac dium tablets as NSAID used to treat pain, swelling, arthritis as a model drug.

tandard graph of Diclofenac sodium in phosphate buffer was prepared by using UV pectrophotometer at λ_{max} of 276 nm. It had good reproducibility and this method was used to ind out concentration of Diclofenac sodium from formulation.

'ormulation development included formulation of fast release Diclofenac sodium tablets by sing sodium starch glycolate, cross carmellose as super disintegrants by sublimation method. Tablets were prepared, evaluated for tests such as bulk density, tapped density, compressibility index, Hausner's ratio before compressing them into tablets and were found to be good. These tablets were evaluated for disintegration time, weight variation.

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

III Year –I I SEMESTER

T	P	C
3+1	0	4

MEDICINAL CHEMISTRY-III

UNIT I

A general introduction to advances in medicinal chemistry with emphasis on the principles of combinatorial chemistry, high throughput screening and QSAR studies.

LO : General concepts, principles, procedures, advantages, equations and methodologies.

UNIT II

1. Types of receptors, interaction forces
2. Preliminary aspects of molecular modeling studies: docking, pharmacophore modeling

LO : General concepts, principles, procedures, advantages and methodologies.

UNIT III

1. **Steroidal anti-inflammatory agents:** classification, structures, SAR, uses and toxicity
2. **Bile acids:** classification, structures and functions
3. **Estrogens and Progesterone:** structures, functions, interconversion of estrogens, uses of natural and synthetic estrogens, synthesis of Progesterone from Diosgenin.

LO : Acquaintance with steroidal structures, features, properties, uses, mode of action.

UNIT IV

1. **Antiarrhythmics:** classification, mode of action, uses and synthesis of Procainamide.
2. **Cardiac glycosides:** classification, structures and structural features, mode of action and therapeutic uses.

LO : Introduction to cardiovascular diseases, uses, mode of action.

UNIT V

1. **Antihypertensives:** classification, mode of action, SAR, currently used drugs and synthesis of Methyldopa, Clonidine, Losartan.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

2. **Antianginals and coronary vasodilators:** classification, mode of action, SAR and uses, synthesis of Isosorbide dinitrate.

LO : Introduction to cardiovascular diseases, uses, mode of action.

UNIT VI

1. **Diuretics:** Definition, classification, mode of action, SAR of different classes, uses and synthesis of Acetazolamide, Ethacrynic acid and Hydrochlorthiazide.

LO : Introduction, structures, methodology of synthesis, advantages.

TEXT BOOKS

1. William O. Foye, Textbook of Medicinal Chemistry by, Lea Febiger, Philadelphia.
2. JM Beale, Wilson & Giswold's Textbook of organic Medicinal Chemistry and pharmaceutical chemistry by (Eds), 11th Ed, Lipcott, Raven, Philadelphia, 2004.
3. S. N. Pandeya, Textbook of mediacinal chemistry, SG Publ. Varanasi, 2003.

REFERENCES

1. D. Abraham (Ed), Burger Medicinal chemistry ad Drug discovery, Vol. 1 & 2. John Wiley & Sons, New York 2003, 6th Ed.
2. Lippincott Williams and Wilkins: Remington Pharmaceutical Sciences
3. L. M. Atherden, Bentley and Driver's Textbook of Pharmaceutical Chemistry. Oxford University Press, Delhi.
4. B.N. Lads, MG.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
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.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM 533 437

IN-VITRO ANTI-INFLAMMATORY ACTIVITY OF ETHANOLIC LEAVES EXTRACT OF *NELUMBO NUCIFERA*

Dissertation Submitted to

JNT UNIVERSITY

KAKINADA

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY

BY

Ch. Anusha (133G1R0008),

D.V.S.G.B. Anjani Devi (133G1R0009

D. Yashodara (133G1R0010)

D. Krishna (133G1R0011)

D. Prasanthi Kumari (133G1R0012)

Under the guidance of

A.Tirupathi Rao, M.Pharm.,(Ph.D.)

Assistant Professor

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

Batch: 2013- 2017

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 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 "IN-VITRO ANTI-INFLAMMATORY ACTIVITY OF ETHANOLIC LEAVES EXTRACT OF *NELUMBO NUCIFERA*" submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2013-2017. This is a bonafide work carried out by *Ch. Anusha (133G1R0008), D.V.S.G.B. Anjani Devi (133G1R0009), D. Yashodara (133G1R0010), D. Krishna (133G1R0011), D. Prasanthi Kumari (133G1R0012)*, under the direct guidance and supervision of A. Tirupathi Rao M.Pharm., (Ph.D.), Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

(Internal Examiner) **(External Examiner)**

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

We hereby declare that the dissertation work entitled "IN-VITRO ANTI-INFLAMMATORY ACTIVITY OF ETHANOLIC LEAVES EXTRACT OF *NELUMBO NUCIFERA*" in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT Unversity, Kakinada for the academic year 2013-2017, 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. A.Tirupathi Rao, M.Pharm.,(Ph.D.),.Assistant Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

Ch. Anusha	*(133G1R0008),*	Ch. Anusha
D.V.S.G.B. Anjani Devi	*(133G1R0009),*	D.V.S.G.B Anjani Devi
D. Yashodara	*(133G1R0010),*	D. Yashodara
D. Krishna	*(133G1R0011),*	D. krishna
D. Prasanthi Kumari	*(133G1R0012)*	D. Prasanthi kumari

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

7. DISCUSSION AND CONCLUSION

The data presented in this study demonstrate ethanolic extracts of **Lotus (Nelumbo nucifera)** possess Anti-inflammatory activities.

Discussion

Lotus belonging to family Nelumbonaceae is a green commonly found herb in India. This plant is believed to be having manifold pharmacological diversities. I decided to work on this plant to find out their usefulness to human being.

There are certain problems in using animals in experimental pharmacological research, such as ethical issues and the lack of rationale for their use when other suitable methods are available or could be investigated. Hence, in the present study the protein denaturation bioassay was selected for in vitro assessment of anti- inflammatory property of ethanol extract of lotus. Denaturation of tissue proteins are one of the well-documented causes of inflammatory and arthritic diseases. Production of auto antigens in certain arthritic diseases may be due to denaturation of proteins in vivo. Agents that can prevent protein denaturation therefore, would be worthwhile for anti-inflammatory drug development.

The increments in absorbance's of test samples with respect to control indicated stabilization of protein i.e. inhibition of heat-induced protein (albumin) denaturation by ethanolic extract of lotus reference drug ibuprofen. From percentage inhibition in both protein denaturation method and HRBC, it has good inflammatory activity.

In HRBC membrane stabilization method the basic principle is that the erythrocyte membrane resembles to lysosomal membrane and as such, the effect of drugs on the stabilization of erythrocyte could be extrapolated to the stabilization of lysosomal membrane. Therefore as the membrane stabilizers, it interferes with the release and/or action of mediators like histamine, serotonin, prostaglandins, and leukotrienes which are responsible for inflammation.

Leukocyte proteinases play an important role in the development of tissue damage during inflammatory reactions and significant level of protection was provided by proteinase inhibitors. Extract of Lotus plant shown significant activity at 400µg(68.81%) and the standard ibuprofen shown 95.63%.

ADITYA PHARMACY COLLEGE SURAMPALEM
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – II SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL ANALYSIS –I

Unit-I

1. 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.
2. 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

3. 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, week base, strong base, week 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.
4. Non-aqueous titrations: principles, advantages and pharmaceutical applications, solvents reagents and indicators used in Nonaqueous 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.

ADITYA PHARMACY COLLEGE SURAMPALEM
PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM 533 43

Unit-III

5. 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

6. 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.

7. 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. Werener'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

8. 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.

PRINCIPAL
Aditya Pharmacy Coll
SURAMPALEM 533 43

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

9. 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.
10. 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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"SYNTHESIS , CHARACTERIZATION AND BIOLOGICAL ACTIVITY OF SCHIFF'S BASE METAL COMPLEXES DERIVED FROM SALICYLALDEHYDE"

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

(2017)

Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

D.Bhavani (133G1R0013) **G.Pavan Kumar (133G1R0014)**

G.V.S.Sai Ram (133G1R0015) **G.Naresh (133G1R0016)**

G.Lakshmi (133G1R0017)

Under the guidance of,

Ms.M.Bhagya lalitha M.S.Pharma

Asst. Professor

Department of pharmaceutical chemistry

Aditya Pharmacy College

Surampalem-533437

2016-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

(Affiliated to JNTUK)

CERTIFICATE

This is to certify that the dissertation entitled ***"synthesis, characterization and biological activity of Schiff base metal complexes derived from Salicylaldehyde"****, 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. Bhavani(133G1R0013), G. Pavan kumar yadav (133G1R0014), G. V. S. Sai ram (133G1R0015), G. Naresh (133G1R0016), G.Lakshmi (133G1R0017),*** *under the supervision of* ***Ms. Bhagya lalitha*** *and it has been previously not submitted to any other University of Academic Instituition for any higher degree.*

Dr.K.Divakar, M.Pharm, Ph.D
Principal and Professor,
Aditya Pharmacy College

Place: Surampalem
Date:

Internal Examiner

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled ***"synthesis, characterization and biological activity of Schiff base metal complexes derived from Salicylaldehyde"***, was carried out in the Department of Pharmaceutical chemistry under the guidance of **M. BHAGYA LALITHA** M.S.Pharma, 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.

D. Bhavani **D. BHAVANI (133G1R0013)**
G. Pavankumar Yadav **G. PAVAN KUMAR (133G1R0014)**
G. V. S. Ram **G. V. S. SAI RAM (133G1R0015)**
G. Naresh **G. NARESH (133G1R0016)**
G. Lakshmi **G. LAKSHMI (133G1R0017)**

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY& CONCLUSION

- In the present study, Schiff bases from salicylaldehyde 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 OPDASBC showed good antibacterial activity.

FUTURE PROSPECTUS:

Further analysis of structure by NMR, Mass spectroscopy is required to interpret the synthesized compounds.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

IV Year –II SEMESTER

T	P	C
3+1	0	4

BIOPHARMACEUTICS AND PHARMACOKINETICS

UNIT - I

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.

LO : To understandBiopharmaceutics, Pharmacokinetics and their applications –absorption mechanisms, factors, their application with examples.

UNIT - II

Drug distribution in the body, Factors influencing distribution.

Plasma protein binding, binding sites, factors influencing protein binding

LO : To understand drug distribution, protein binding – factors.

UNIT - III

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.

LO : To understand the significance of plasma drug concentrations, compartment models - kinetics, parameters.

UNIT - IV

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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE SURAMPALEM

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

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

UNIT - V

Clinical pharmacokinetics

Definition and scope

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

Pharmakokinetic drug interactions and its significance in combination therapy.

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

UNIT - VI

Bioavailability and Bioequivalance.

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

Design of single dose bioequivalance 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 methods, interpretation of dissolution
   data in vitro, in vivo correlations.
b. Bioavailability testing protocol and procedures.
c. In vivo methods of evaluation – statistical treatment.

LO : To understand bioavailability, bioequivalence, concepts, assessments, design, regulation, invitro dissolution methods, Invitro-invivo correlation.

TEXT BOOKS

PRINCIPAL
Aditya Pharmacy Colle
M 533 43

1. Venkateshulu, Fundamentals of Biopharmaceutics and Pharmacokinetics, Pharma Book Syndicate.
2. Milo Gibaldi, Biopharmaceutics and clinical pharmacokinetics 4/Edn. Pharma Book Syndicate.
3. DM Brahmankar and SB Jaiswal, biophamaceutics and pharmacokinetics- a treatise, vallabhprakasham, Delhi.

'ORMULATION AND ENHANCEMENT OF DISSOLUTION RATE OF ACECLOFENAC TABLETS BY EMPLOYING STARCH PHOSPHATE AND PVP K 30

DISSERTATION SUBMITTED TO THE JNTU-K UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELOR OF PHARMACY.

(2017)

Jawaharlal Nehru Technological University, Kakinada A.P..

Submitted by

G.ANUSHA (133G1R0018)

G.RAMYA RAVALI (133G1R0019)

A.J.S.S.PRASANTHI (133G1R0021)

J.ANUVEERA (133G1R0022)

J.MANIKANTA SRUTHI (133G1R0023)

Under the Guidance of:

Miss. V.V.L.S.P.SOWJANYA. M.Pharm

Asst. Professor

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem-533437

2016-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled **"FORMULATION AND ENHANCEMENT OF DISSOLUTION RATE OF ACECLOFENAC TABLETS BY EMPLOYING STARCH PHOSPHATE AND PVP K 30"** submitted to the JNTU, Kakinada in partial fulfillment of the requirement for the award of the degree of **"Bachelor of Pharmacy"** is a record of original research work carried out by **G.Anusha (133G1R0018), G.Ramya Ravali (133G1R0019), A.J.S.S.Prasanthi (133G1R0021), J.Anuveera (133G1R0022), J.Manikanta Sruthi (133G1R0023).** We have done this research work under the supervision of **V.V.L.S.P.Sowjanya,** M.Pharm and it has been previously not submitted to any other university or academic institution for any other higher degree.

Dr.K.Divakar, M.Pharm.Ph.D
Principal and Professor,
Aditya Pharmacy College.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE • SURAMPALEM •

Place: Surampalem

Date: 30-3-17

Internal Examiner

External Examiner

ADITYA PHARMACY COLLEGE • SURAMPALEM •

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled **"FORMULATION AND ENHANCEMENT OF DISSOLUTION RATE OF ACECLOFENAC TABLETS BY EMPLOYING STARCH PHOSPHATE AND PVP K 30"**,was carried out in the department of Pharmaceutical Technology under the guidance of Miss.**V.V.L.S.P.SOWJANYA**, M.Pharm, Aditya Pharmacy College, Surampalem. The extent and source of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

G. Anusha **G.ANUSHA (133G1R0018)**

G. Ramya Ravali **G.RAMYA RAVALI(133G1R0019)**

A.J.S.S.PRASANTHI(133G1R0021)

J. Anu Veera **J.ANUVEERA(133G1R0022)**

J H Srutti **J.MANIKANTA SRUTHI(133G1R0023)**

ADITYA PHARMACY COLLEGE * SURAMPALEM - 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CHAPTER VII

SUMMARY AND CONCLUSIONS

Aceclofenac, a widely prescribed NSAID drug belongs to class II under BCS classification and exhibit low and variable oral bioavailability due to its poor aqueous solubility. Because of poor aqueous solubility and dissolution rate it poses challenging problems in its tablet formulation development. It needs enhancement in the dissolution rate in its formulation development. The objective of the present study is to enhance the dissolution rate of Aceclofenac tablet formulation employing Starch Phosphate and PVP K30 by 2^2 factorial design.

Introduction, objectives and plan of the research work are described in Chapter I. Literature on factorial design in formulation development is reviewed in Chapter II. Literature on Aceclofenac including the past research work on enhancement of dissolution rate and formulation development of Aceclofenac is described in Chapter III. The excipient profiles are given in Chapter IV. Materials, instruments used and analytical methods are described in Chapter V.UV spectrophotometric method was used for the estimation of Aceclofenac in the products prepared and in the dissolution rate studies.

Studies on dissolution of Aceclofenac tablet formulation by 2^2 factorial design employing Starch Phosphate and PVP K30 are described in Chapter VI.

From the results obtained the following conclusions are drawn:

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

III Year –I I SEMESTER

T	P	C
3+1	0	4

PHARMACOLOGY – II

UNIT - I

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

Drugs used in cardiac arrythmias, 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

Drugs acting on hematopoietic system

Anti-coagulants, Anti-platelets, Thrombolytics & hematinics.

Drugs acting on urinary system

Fluid and electrolyte balance, Diuretics & Antidiuretics.

LO : Grasping knowledge on pathophysiology of blood and blood forming organs, kidney – urine formation and the Pharmacology of drugs.

UNIT - III

Drugs acting on Endocrine system

Pancreatic hormone and Anti-Diabetic drugs, Thyroid & Anti-thyroid drugs, Gonadal hormones & Inhibitors, Adrenocortico steroids & 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

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

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

UNIT - V

Drugs Acting on the Respiratory System

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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

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

UNIT - VI

Chemotherapeutic agents and their applications: General principles of chemotherapy,

Sulphonamides and co-trimoxazole, Antibiotics : Penicillins, cephalosoporins, Beta lactams,

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 immune suppressive Agents.

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

TEXT BOOKS

1. Rang & Dale, Textbook of Pharmacology.
2. Sathoskar, Pharmacology and pharmaco therapeutics Vol. 1 & 2, Publ by Popular Prakashan, Mumbai.
3. Bertram. G. Katzung, Basic and clinical pharmacology, 9th Edn, Mc Graw hill
4. Tripathi, Textbook of Pharmacology, JAYPEE.
5. Leilani Grajeda, Understanding Pharmacology: A physiological Approach
6. F.S.K Barar, Essentials of Pharamcotheraptics.

REFERENCES

1. J.G. Hardman and Lee E. Limbard, Good Mann & Gilmann: The Pharmacological basis of therapeutics, Mc Graw hill, Health Professions Dvn.
2. H.P Rang, M. M. dale & J.M. Ritter, Pharmacology, Churchill living stone, 4th Ed.
3. J. Crossland, Lewis, Pharmacology, Church living stone.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

EVALUATION OF IN-VITRO ANTIUROLITHIATIC ACTIVITY OF ETHANOLIC LEAF EXTRACT OF *RAPHANUS SATIVUS.*

Dissertation submitted to the JNTUK in partial fulfilment of the requirements for the degree of Bachelor of Pharmacy.

Jawaharlal Nehru Technological University, Kakinada A.P.,

Submitted by

K.MANVITHA (133G1R0024)
K.L.HARIPRIYA (133GIR0025)
K.M.PAVANI (133G1R0026)
K.S.S.S.SANDHYA (133G1R0027)
K.PRADEEP (133G1R0028)
K.LAVANYA (133G1R0029)

Under the Guidance of:

K.V.RATNAM M.Pharm

Asst. Professor

Department of Pharmacology

Aditya Pharmacy College

Surampalem-533437

2016-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

(Affiliated to JNTUK)

CERTIFICATE

This is to certify that the dissertation entitled " EVALUATION OF IN-VITRO ANTIUROLITHIATIC ACTIVITY OF ETHANOLIC LEAF EXTRACT OF *RAPHANUS SATIVUS* " submitted to the **JNTUK**, 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.MANVITHA (133G1R0024), K.L.HARIPRIYA (133G1R0025), K.M.PAVANI (133G1R0026), K.S.S.S.SANDHYA (133G1R0027), K.PRADEEP (133G1R0028), K.LAVANYA (133G1R0029) under the supervision of K.V.RATNAM M.pharm and it has been previously not submitted to any other university of academic institution for any higher degree.

Dr.K.Divakar M.Pharm, Ph.D
Aditya Pharmacy College
Surampalem
Principal and Professor,

Aditya Pharmacy College

Place: Surampalem

Date: 30/3/2017

Internal Examiner

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM 533 43

External Examiner

DECLARATION

The project embodied in this thesis entitled "Evaluation of In-vitro Antiurolithiatic activity of ethanolic leaf extract of *Raphanus sativus*", was carried out in the Department of Pharmacology under the guidance of **K.V.RATNAM** 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. Manvitha	**K.MANVITHA (133G1R0024)**
K.L.Hari Priya	**K.L.HARI PRIYA (133G1R0025)**
K.M. Pavani	**K.M.PAVANI (133G1R0026)**
K.S.S.S. Sandhya	**K.S.S.S. SANDHYA (133G1R0027)**
K. pradeep	**K.PRADEEP (133G1R0028)**
K. Lavanya	**K.LAVANYA (133G1R0029)**

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437.

7. CONCLUSION

According WHO report herbal medicine is still the main stay of therapy for about 75-80% of the whole population in developing countries for primary health care. This is because of better cultural acceptability, affordability and compatibility with fewer side effects. The validation of the folkloric claims of these medicinal plants will provide scientific basis for the conservation of tropical medicinal resources, the deployment of the beneficial ones as phyto medicine in the primary healthcare and the development of potential bioactive constituents. This thesis establishes marked In-vitro antiurolithiatic activity of ethanolic leaf extract of *Raphanus sativus*.

This investigation has opened up the possibility of the use of this plant in drug development. However, the mechanism of action of the extract in animal models of lithiasis needs to be investigated. As the observed activity of the plant extract might be due to other phytochemicals present in it, further characterization and isolation of the major active components from the plant extract are required.

However, before coming to the conclusive statement, further research is needed to investigate the bioactive constituents which are responsible for these biological activities.

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – II SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL UNIT OPERATIONS – II

UNIT-I

Heat Transfer: Source of heat, heat transfer, steam and electricity as heating media, determination of requirement of amount of steam/electrical energy, steam pressure, boiler capacity, mathematical problems on heat transfer.

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

UNIT-II

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

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

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, Fluid bed dryer, spray dryer, vacuum oven and freeze-dryer.

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

UNIT-V

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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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

UNIT-VI

Mixing: Theory of mixing, solid-solid, solid-liquid and liquid-liquid mixing equipment, double cone, twin-shell, silverson mixer, colloid mill, sigma blade mixer, planatery mixer, propeller mixer and turbine mixer.

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

TEXT BOOKS

1. S.J. Carter, Cooper and Gunn's Tutorial Pharmacy, 6th ed., CBS publisher, Delhi.
2. CVS Subhramanyam, Pharmaceutical Engineering.
3. K. Samba Murthy, Pharmaceutical Engineering.
4. Mc Cabe & Smidth.Unit Operations.

REFERENCE BOOKS

1. W.I. Macebe and J. C. Smith Macro, Unit Operations To Chemical Engineering, Hill Int. Book Co., London.
2. L. Lachman, H. Lieberman & J. L Kaniz, The Theory And Practice of Industrial Pharmacy, Lee & Febiger Philadelphia, USA.
3. Badzer & Banchoro, Introduction to Chemical Engineering.
4. Perry's Handbook of Chemical Engineering.
5. M.E.Aulton, Pharmaceutics - The science of dosage form design, 2nd ed.
6. E.A. Rawlin's, Bentley's Text Book of Pharmaceutics, 8th ed ELBS.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

"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.

(2017)

Jawaharlal Nehru Technological University, Kakinada, A.P

BY:

M.Vijaya Karuna (133G1R0030) **M.Sai Sudha Sridevi(133G1R0033)**

ManchalaSanisha (133G1R0031) **M.Sejal Mahima(133G1R0034)**

M.V.AparnaLakshmi(133G1R0032) **M.A.Sameena(133G1R0035)**

Under the guidance of,

Mrs.MadhaviLatha Samala M.Pharm

Asst. Professor

Department of pharmaceutics

Aditya Pharmacy College

Surrampalem-533437

2016-2017

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 M.Vijaya Karuna (133G1R0030), Manchala Sanisha (133G1R0031), M.V.Aparna Lakshmi (133G1R0032), M.Sai Sudha Sridevi (133G1R0033), M.Sejal Mahima (133G1R0034), M.A.Sameena (133G1R0035) under the supervision of* ***Mrs.MadhaviLatha Samala*** *and it has been previously not submitted to any other University of Academic Instituition for any higher degree.*

Place: Surampalem

Date: 30-03-2017

Dr.K.Divakar, M.Pharm, Ph.D
Principal and Professor,
Aditya Pharmacy College

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

ADITYA PHARMACY COLLEGE • SURAMPALEM •

Internal Examiner

External Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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.MadhaviLatha Samala, 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.

M.Vijaya Karuna (133G1R0030) M.V.Karuna

Manchala.Sanisha (133G1R0031) M. Sanisha

M.V.Aparna Lakshmi (133G1R0032) Aparna

M.Sai Sudha Sridevi (133G1R0033) M. Sridevi

M.Sejal Mahima (133G1R0034) M. Sejal Mahima

M.A.Sameena (133G1R0035) M. A. Sameena

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

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 PEG (1:2 & 1:3 ratios by fusion and solvent evaporation methods), PVA, Propylene Glycol, Cross-carmellose Sodium, Citric Acid, Sodium Saccharin and Tween80. Three different formulations of the films F_1, F_2, F_3 were prepared containing Drug, CCS, Solid dispersion of the drug 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.
- The folding endurance was optimum and exhibited good physical and mechanical properties. The folding endurance of drug (F1) was lower as compared to CCS (F2) and highest to the Solid dispersion (F3).
- The release studies of Amlodipine besylate indicates that formulation containing solid dispersion of drug showed faster and better release profile compared to the other formulations.

The *in-vitro* release of Amlodipine from the films F1 to F3 was in the range of 69.77 to 94.22 in phosphate buffer solution, pH 7.4.

Zero order and first order plots were drawn for 3 formulations (F1,F2,F3) and were found to obey first order kinetics out of which F3 gave better result.

udy using porcine or bovine mucosa for studying the permeability properties, muco-
e strength is also required.

her work in this direction is needed in order to improve the absorption of amlodipine
ns, probably by including the permeability enhancers, pH modifiers, and other additives.

PRINCIPAL

III Year –I I SEMESTER

T	P	C
3+1	0	4

PHARMACEUTICAL TECHNOLOGY - II

UNIT - I

Capsules: Advantage and disadvantages of capsule dosage forms, material 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

Microencapsulation: Types of microencapsulation and importance of microencapsulation in pharmacy, microcapsulation 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 Preparations, evaluation – Applications of Microcapsules.

UNIT - III

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

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.

PRINCIPAL
Aditya Pharmacy

UNIT - V

Parenteral Products

a. Preformulation factors, routes of administration, water for injection, treatment

   apyrogenicity, non-aqueous vehicles, isotonicity and methods of its adjustment.

b. Formulation details, container and closures and selection.

c. Prefilling treatment, washing and sterilization of containers and closures, preparation of

   solution and suspensions, filling and closing of ampules, vials, infusion fluids,

   lyophilization & preparation of sterile powders, equipment for large-scale manufacture

   and evaluation of parenteral products.

d. Aseptic techniques, sources of contamination and method of prevention. Design of

   aseptic area, laminar flow benches, services and maintenance.

LO : To understand Formulations, Preformulations, additives, Manufacturing methods, containers, Packaging, evaluation of Parentrals – quality control, Types of sterile powders, aseptic processing facilities.

UNIT - VI

Packaging of Pharmaceutical products:

Packaging components, types, specifications and methods of evaluation as per I.P. Factors influencing choice of containers, package testing, legal and other official requirements for containers, packing testing.

Methods of packing of solid, liquid and semi-solid dosage forms, Factors influencing packing material, stability aspects of packaging.

LO : To understand Packaging components- types, specifications and evaluation methods of packaging materials and containers- legal and official requirements.

TEXT BOOKS

1. L. Lachman, H.A, Lieberman and J.L. Kanig, Theory & Practice of industrial pharmacy, Lea & Febieger, Philadelphia Latest Edn.
2. HC Ansel introduction R, Pharmaceutical Dosage forms .
3. Pharmaceutical Dosage forms Tablet by Lieberman, Lachman.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"STUDY OF DIFFERENT SUPER DISINTEGRANTS ON SOLID DISPERSED ETORICOXIB TABLETS EMPLOYING PGS-PVP-AEROSIL CO PROCESSED EXCIPIENT AS DIRECTLY COMPRESSIBLE VEHICLE"

Dissertation submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfilment of the requirements for the degree of bachelor of pharmacy (2017)

Jawaharlal Nehru Technological University, Kakinada

SUBMITTED BY

MD. MUNEERA NASHEEN (133G1R0036)

N. VIJAY KUMAR (133G1R0039)

M.N.L.SRAVYA (133G1R0037)

N. VIMALA RANI (133G1R0040)

N. DIVYA SUPRIYA (133G1R0041)

UNDER THE GUIDANCE OF

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

Assistant professor

ADITYA PHARMACY COLLEGE

Surampalem - 533437

2016-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled "STUDY OF DIFFERENT SUPER DISINTEGRANTS ON SOLID DISPERSED ETORICOXIB TABLETS EMPLOYING PGS-PVP-AEROSIL CO PROCESSED EXCIPIENT AS DIRECTLY COMPRESSIBLE VEHICLE" 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 MD.MUNEERA NASHEEN(133G1R0036), M.N.L. SRAVYA(133G1R0037), N.VIJAY KUMAR(136G1R0039),N.VIMALA RANI(133G1R0040) , N.DIVYA SUPRIYA(136G1R0041). We have done this research under the supervision of **Mr. S.P.N. Kumar, M.pharm** and it has been previously not submitted to any other university or academic institution for any higher degree.

Dr. K.Divakar, M.Pharm, Ph.D
Aditya Pharmacy College.
Surampalem-533437.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Place: Surampalem

Date:

Internal Examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

External Examiner

DECLARATION

The project embodied in this thesis entitled "STUDY OF DIFFERENT SUPER DISINTEGRANTS ON SOLID DISPERSED ETORICOXIB TABLETS EMPLOYING PGS-PVP-AEROSIL CO PROCESSED EXCIPIENT AS DIRECTLY COMPRESSIBLE VEHICLE", 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.

Md. Muneera Nasheen
MD.MUNEERANASHEEN (133G1R0036)

M.N.L.Sravya
M.N.L.SRAVYA (133G1R0037)

N.Vijaykumar.
N.VIJAY KUMAR (133G1R0039)

N. Vimala Rani
N.VIMALA RANI (133G1R0040)

N. DivyaSupriya
N.DIVYA SUPRIYA (133G1R0041)

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CHAPTER VIII

SUMMARY AND CONCLUSIONS

An efficient platform for the manipulation of excipient functionality is provided by co-processing two or more existing excipients. Co-processing is based on the novel concept of two or more excipients interacting at the sub particle level, the objective of which is to provide a synergy of functionality improvements as well as masking the undesirable properties of individual excipients. The objective of the present study is to prepare and characterize pregelatinised starch-poly vinyl pyrrolidone K 30-Aerosil (PGS-PVP-Aerosil) co-processed excipient and to evaluate its application as directly compressible vehicle in tablet formulations. Its application as a carrier for enhancing the dissolution rate of selected poorly soluble drugs from solvent deposited (SD) dispersions and their tablet formulations was also evaluated.

PGS-PVP-Aerosil co-processed excipient was prepared by gelatinizing potato starch in the presence of PVP K-30 and Aerosil and drying the resulting mass and was characterized by determining melting point, solubility, swelling index in water, pH and micromeritic characters namely particle size, bulk density, tapped density, angle of repose and compressibility index and evaluated for its application as directly compressible vehicle in tablet formulations of etoricoxib.

From the results obtained the following conclusions are drawn:

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

1. The new co-processed excipient prepared was crystalline, discrete, fine and free flowing powder.
2. It is insoluble in water and aqueous fluids of pH 1.2, 4.5 and 7.4 and in several organic solvents.
3. It exhibited high swelling (250%) in water.
4. The new excipient developed (PGS- PVP-Aerosil) exhibited excellent flow properties alone and as blends with etoricoxib.
5. Tablets of etoricoxib prepared by direct compression method employing blends (1:1) of PGS-PVP-Aerosil co-processed excipient with etoricoxib were found to be of good quality with regard to drug content, hardness, friability, disintegration time and dissolution rate.
6. All the etoricoxib tablets formulated disintegrated rapidly within 2 min 50 sec. But etoricoxib tablets prepared employing crosscarmellose sodium disintegrated, 60 sec quickly than the tablets prepared employing sodium starch glycolate and gave rapid dissolution of the contained drug fulfilling the official dissolution rate test specification (IP 2010) of NLT 70% in 45 min.
7. Thus PGS-PVP-Aerosil co-processed excipient developed was found to be a promising directly compressible vehicle for the preparation of compressed tablets with fast dissolution characteristics.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

The new co-processed excipient (PGS-PVP-Aerosil) was also evaluated as a carrier in solvent deposited (SD) dispersions for enhancing the dissolution rate of poorly soluble BCS class II drug Etoricoxib. SD dispersion of Etoricoxib in PGS-PVP-Aerosil were prepared by

kneading method using 1:1 proportion of drug : excipient. The feasibility of formulating this SD dispersion into compressed tablets was also evaluated. Tablets of etoricoxib (120 mg) were prepared by direct compression method employing SD dispersion and the tablets were evaluated. From the results obtained the following conclusions are drawn.

1. The SD dispersion prepared were fine, discrete and free flowing powders. SD dispersion of etoricoxib in PGS-PVP-Aerosil gave rapid and higher dissolution of the contained drug .
2. SD dispersion in PGS-PVP-Aerosil could be formulated into tablets by direct compression method and the resulting tablets prepared by employing croscarmellose sodium fulfilled the official specifications with regard to drug content, hardness, friability and disintegration time.
3. All the tablets prepared disintegrated rapidly within 2-50 sec but etoricoxib tablets prepared employing crosscarmellose sodium disintegrated with in 60 sec quickly than the tablets prepared employing sodium starch glycolate.
4. Solid dispersed Etoricoxib tablets formulated employing Crosscarmellose sodium fulfilled the official (IP 2010) dissolution rate specification of NLT 70% in 45 min prescribed for etoricoxib tablets.

Thus the results of the present study indicated that the dissolution rate of etoricoxib could be markedly enhanced by solvent deposition on the new co-processed excipient (PGS-PVP-Aerosil) developed. SD dispersion of Etoricoxib in the new co-processed excipient (PGS-PVP-Aerosil) could be compressed into tablets retaining their fast dissolution characteristics.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

IV Year –II SEMESTER

T	P	C
3+1	0	4

CONTROLLED RELEASE AND NOVEL DRUG DELIVERY SYSTEMS

UNIT - I

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

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

UNIT - II

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

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

UNIT - III

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

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

UNIT - IV

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

LO : To understand mechanism of bioadhesion, mucoadhesive materials, forumulation and evaluation of mucoadhesive-based systems.

PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM 533 437

UNIT - V

Targeted Drug Delivery Systems: Fundamentals and applications, formulation and evaluation of liposomes, resealed erythrocytes and nano particles.

LO : To understand fundamentals and applications, formulation and evaluation of liposomes, resealed erythrocytes and nano particles.

UNIT - VI

Study of polymers for controlled release – Classification, study of biodegradable polymers & hydrogels – their applications.

LO : To understand classification, study of biodegradable polymers & hydrogels – their applications.

TEXT BOOKS

1. N.K. Jain, Control Drug Delivery Systems by
2. Y.Anjaneyulu&Maraiah, Quality Assurance & Quality Management in Pharmaceutical

   Industry.
3. L. Lachman, H.A, Lieberman and J.L. Kanig, Theory & Practice of industrial pharmacy by,

   Lea &Febieger, Philadelphia Latest Edn.
4. Shobhan Rani Hiremath Text Book of Industrial Pharmacy.

REFERENCES

1. Leon ShargelIsadoreKanfer, Generic Drug Product Development, Solid Oral Dosage

   Forms, Marcel Dekker.
2. Sagarian& MS Balsam, Cosmetics Sciences &Technology.Vol.1, 2 & 3
3. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences
4. E.A Rawlkins, Bentley's Text Book of Pharmaceutics, ELBS publ
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
7. Gilbert S. Banker and Christopher T Rhodes, Modern Pharmaceutics, IVthed, marcel

   dekker, USA, 2005.
8. YiewChien, novel drug delivery systems, 2nded, marcel dekker 2003.
9. Robert. A. Nash, Pharmaceutical Process Validation, 3rd Ed Marcel Dekker, 2003.
10. Good Manufacturing Practices – Schedule M, Read with The Drugs And Cosmetic Rules

    1945.
11. M.E. Aulton, Pharmaceuitcs- The science of Dosage form Design 2nd ed.
12. AukunuruJithan, Oral Drug Delivery Technology.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF FAST DISSOLVING TABLETS OF AMLODIPINE BESYLATE BY NOVEL FOAM GRANULATION TECHNIQUE

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

(2017)

Jawaharlal Nehru Technological University, Kakinada A.P.,

IN

Department Of Pharmaceutics

BY

Naripireddy Seshagiri	(133G1R0042)
Nemani Vidya	(133G1R0043)
Nunna Prasanna Satya Lakshmi	(133G1R0044)
Padala Revathi Sri Lakshmi	(133G1R0045)
Palatla Krishna Aishwarya	(133G1R0046)

Under the Guidance of

Ms. GOWRIPATTAPU SRIDEVI, M.Pharm

Asst. professor

Department of pharmaceutical technology

Aditya Pharmacy College

Surampalem- 533437

2013-2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that the dissertation entitled "Formulation And Evaluation Of Fast Dissolving Tablets Of Amlodipine Besylate By Novel Foam Granulation Technique" 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 **Naripireddy Seshagiri (133G1R0042) Nemani Vidya (133G1R0043)Nunna Prasanna Satya Lakshmi (133G1R0044) Padala Revathi Sri Lakshmi (133G1R0045) Palatla Krishna Aishwarya (133G1R0046)** under the supervision Gowripattapu Sridevi M.Pharm and it has been previously not submitted to any other university or academic institution for any higher degree.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

Place: Surampalem
Date:

Internal examiner

External examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled "Formulation and Evaluation of Fast Dissolving Tablets of Amlodipine Besylate by Novel Foam Granulation Technique" was carried out in the department of pharmaceutics under the guidance of **Gowripattapu Sridevi** M.Pharm, Asst. professor, dept. of pharmaceutical technology, Aditya Pharmacy College, Surampalem. This work is original and has not been submitted in part or on full for any degree of this or any other university. The information furnished in this dissertation is genuine to the best of my knowledge and belief.

N. Seshagiri — **Naripireddy Seshagiri (133G1R0042)**

N. Vidya — **Nemani Vidya (133G1R0043)**

N. Prasanna. — **Nunna Prasanna Satya Lakshmi (133G1R0044)**

P. R. S. Lakshmi — **Padala Revathi Sri Lakshmi (133G1R0045)**

P Aishwarya — **Palatla Krishna Aishwarya (133G1R0046)**

ADITYA PHARMACY COLLEGE * SURAMPALEM - 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

9. SUMMARY AND CONCLUSION

e experimental data, it can be concluded that

The approach of the present study was to make a comparative evaluation of drug release profile between natural superdisintegrant (fenugreek seed mucilage) & synthetic superdisintegrant (Croscarmellose sodium) using novel foam granulation technique.

Disintegrant action of fenugreek seed mucilage (natural) is faster than Croscarmellose sodium (synthetic).

Fast disintegrating tablets of Amlodipine besylate were prepared and evaluated. In the present study 4 formulations were prepared. Two formulations with natural superdisintegrant and other two formulations with synthetic superdisintegrant.

Standard curve of Amlodipine besylate was determined by plotting absorbance V/s concentration at 361 nm and it follows the Beer's law.The R^2 is 0.999 respectively.

The granules for matrix tablets were characterized with respect to angle of repose, bulk density, tapped density, Carr's index, and Hausners ratio. Angle of repose was less than 30° and Carr's index values were less than 26 for the formulations of all the batches indicating good to fair flowability and compressibility. Hausner's ratio was less than 1.256 for all the batches indicating good flow properties.

The pre and post compression studies shown that the formulation is suitable for FDT.

Amlodipine besylate FDT can be formulated using foam granulation technique.

By the results we confirm that order of drug release follows first order

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – II SEMESTER

T	P	C
3+1	0	3

MEDICINAL CHEMISTRY-I

UNIT-I

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

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

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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

UNIT-IV

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.

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

1. **Analgesics and Non-steroidal anti-inflammatory agents (NSAIDs) :** paracetamol, aspirin, ibuprofen, indomethacin, diclofenac.
2. **Narcotic analgesics :** mepridine, 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

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, an understanding of morphinans, its agonists and antagonists.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

TEXT BOOKS

1. William O. Foye, Textbook of Medicinal Chemistry, Lea Febiger, Philadelphia.

ADITYA PHARMACY COLLEGE SURAMPALEM

Synthesis and Characterization of 2-Pyrazoline derivatives

DISSERTATION WORK SUBMITTED TO

ADITYA PHARMACY COLLEGE
LIBRARY
ACC No. PR.596
NAGAR, SURAMPALEM

Degree of

BACHELOR OF PHARMACY

Submitted By

P.ANIL KUMAR
(133G1R0047)

P.K.MOUNIKA
(133G1R0048)

P.DEEPIKA
(133G1R0049)

P.N.V.HARITHA
(133G1R0050)

P.AMRUTHA
(133G1R0051)

Under Supervision of

Mr. K. GOVINDARAO, M. Pharmacy
Associate Professor
Department of Pharmaceutical Chemistry

ADITYA PHARMACY COLLEGE
Surampalem, E.G. District, Andhra Pradesh – 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

Aditya Nagar, ADB Road, Surampalem-533437

CERTIFICATE

This is to certify that project entitled as **"Synthesis and Characterization of 2-Pyrazoline derivatives"** by ***P. Anil Kumar, P.Krishna Mounika, P. Deepika, P.N.V. Haritha, P. Amrutha*** submitted in the partial fulfillment for the award of Degree of Bachelor of Pharmacy were carried out at our college under the guidance and supervision of ***Mr. K. GOVINDA RAO***, Associate Professor, Department of Pharmaceutical Chemistry, Aditya Pharmacy College, Surampalem during academic year 2013-2017.

INSTITUTION GUIDE

Mr. K. GOVINDARAO, M.Pharm.

Associate Professor

Department of Pharmaceutical Chemistry

Aditya Pharmacy College

Surampalem – 533437.

ADITYA PHARMACY COLLEGE • SURAMPALEM •

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ABSTRACT

The present aim is to synthesize five membered heterocyclic compounds i.e. 2-Pyrazoline derivatives. Aromatic ketone (acetophenone) was treated with aldehyde derivatives in the presence of ethanol and NaOH with vigorous stirring in cold conditions (10-15^{0}C) to get various chalcone derivatives. The obtained various chalcone derivatives were treated with 2, 4-dinitrophenyl hydrazine and cyclo condensed in the presence of ethanolic NaOH and recrystallized by water: methanol, ethanol, ethyl acetate to get 2-pyrazoline derivatives. This scheme of reaction went to completion within 12-14 hr.

In this study, we have synthesized five derivatives of 2-pyrazoline derivatives (p_{a-e}). The newly synthesized novel compounds were characterized using IR, $_1$HNMR, spectral data and elemental analysis. The yields of all compounds were found to be satisfactory; their physical and analytical determination was done by using melting point apparatus, purification of compounds by TLC (R_F value). The spectral characterizations of new compounds were made on the basis of IR and $_1$HNMR data.

From our present investigation it can be conclude that, we have synthesized various pyrazoline derivatives. The test compounds were synthesized in good percentage of yield their physical and analytical characterization was done along with the spectral characterization.

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

7. CONCLUSION

In this study, we have synthesized various 2-pyrazoline derivatives. The test compoun were synthesized in good percentage of yield their physical and analytical determination w done by using melting point apparatus, purification of compounds by TLC, and the structu assignments of new compounds were made on the basis of physical and IR (KBr, Vmax cm^{-} H^1 NMR data.

Based upon our present findings, the future work would be directed further analysis structure by Mass spectroscopy is required to interpret the synthesized compounds and mo extensive study is needed to confirm the mode of action studies to optimize the effectiveness c these compounds. The structural modification of the parent analogs with the help of moder QSAR tools, which may lead to the development of various pharmacological activities i.e antimicrobial, analgesic, anti-pyretic, anti-inflammatory, antiviral, antidepressant, ant tubercular, and anticancer, which leads with diversified activity profile.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – I SEMESTER

T	P	C
3+1	0	3

PHARMACOGNOSY – I(50 Hrs)

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

Classification of Crude Drugs: Alphabetical, morphological, pharmacological, chemical, taxonomical and chemotaxonomical methods of classification with suitable examples. 06

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

UNIT-III

Cultivation, collection, processing, drying and storage of medicinal plants: 08

- 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 improve agricultural conditions provide high yield and the methods be standardized to get consistent yields.

UNIT-IV

Adulteration &Evaluation of crude drugs: 06

Adulteration of crude drugs: Different methods of adulteration of crude drugs and general methods for detection of adulterants. For example

i) Organoleptic ii) Microscopic iii) Physical iv) Chemical and Biological methods of evaluation.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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

UNIT-V 06

Systematic pharmacognostic study of the following carbohydrates and derived products: Acacia, tragacanth, agar, starch, guargum, pectin, isabgol and honey.

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

UNIT-VI

Systematic Pharmacognostic study of the following Lipids: Castor oil, cod liver oil, shark liver oil, linseedoil, cocoa butter, kokum butter, bees wax, wool fat, hydrocarpus oil, spremaceti, lard and olive oil.

08

Systematic Pharmacognostic study of the following volatile oils: Mentha, coriander, cinnamon, lemon oil,nutmeg, eucalyptus, ginger, cardamom, tulsi, lemon grass, caraway, cumin, dill, clove, fennel and black pepper.

06

LO : To maintain quality in fixed and volatile oils.

TEXT BOOKS

1. Kokate C.K, Purohit AP &GokhalePharmacognosy S.B (Nirali)
2. Trease and Evans Pharmacognosy, Latest Edition.
3. Tyler, Brady & Robert, Pharmacognosy.
4. T.E.Wallis, Textbook of Pharmacognosy, Pub by CBS Publishers and distributors, New Delhi.

REFERENCES

1. Atal C.R & Kapur B.M, Cultivation & Utilization of Medicinal Plants.
2. Ayurvedic Pharmacopoeia of India, Pub by Govt. of India.
3. A.A. Farooqi& B.S. SreeRamu, Cultivation of Medicinal and Aromatic Crops, University Press.
4. CSIR Publications, Wealth of India.
5. Handa and Kapoor, Text Book of Pharmacognosy.
6. Gokhale, Pharmacognosy.
7. Heinrich, Fundamentals of Pharmacognosy and Phytotherapy.
8. Taylor and Evans, Text Book of Pharmacognosy.
9. Iyengar, Pharmacognosy of Powdered Crude Drugs.
10. R.N Chopra, S.L Nair and I.C Chopra, Glossary of Indian Medicinal Plants, CSIR, New Delhi.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 53?

PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL AND ANTHELMINTIC ACTIVITIES OF AQUEOUS AND ALCOHOLIC EXTRACTS OF *ACACIA CONCINNA AND CASSIA AURICULATA*

Thesis submitted to

ADITYA PHARMACY COLLEGE
LIBRARY
ACC No. PR599
ADITYA NAGAR, SURAMPALEM

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

For the award of the degree of

Bachelor of Pharmacy

P.RATNARAJU (133G1R0052) RUHI RABIA (133G1R0053)

R.PUSHPA (133G1R0054) S.SUSHMITHA (133G1R0055)

SK.PARVIN BEGUM (133G1R0056)

Under the guidance of

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

Assistant Professor in Pharmacognosy & Phytochemistry

Aditya Pharmacy College

Surampalem -533437

ADITYA PHARMACY COLLEGE
SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CERTIFICATE

This is to certify that P.Ratnaraju, Ruhi Rabia, R.Pushpa, S.Sushmitha, SK.ParvinBegum has carried out the dissertation work on "PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL AND ANTHELMINTIC ACTIVITIES OF AQUEOUS AND ALCOHOLIC EXTRACTS OF ACACIA CONCINNA AND CASSIA AURICULATA" in the partial fulfilment of the requirements for the award of B.Pharm in Pharmacognosy & Phytochemistry and this dissertation work is a bonafide research work done by them under the supervision of M. Vinay kumar and guidance at the department of Pharmacognosy & Phytochemistry, Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada.

Dr. K. DIVAKAR, M. Pharm, Ph.D

PRINCIPAL,
Aditya Pharmacy College
SURAMPALEM 533 437

Professor in Pharmaceutical Technology,

Aditya Pharmacy College,

Surampalem.

Place: Surampalem

Date: 30/3/17

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Internal Examiner

External Examiner

DECLARATION

The research work embodied in this thesis entitled "PRELIMINARY PHYTOCHEMICAL SCREENING, ANTIBACTERIAL AND ANTHELMINTIC ACTIVITIES OF AQUEOUS AND ALCOHOLIC EXTRACTS OF ACACIA CONCINNA AND CASSIA AURICULATA" was carried out by us in the Pharmacognosy Laboratories of Department of Pharmacognosy & Phytochemistry, Aditya Pharmacy college, Surampalem, affiliated to Jawaharlal Nehru Technological University, Kakinada, India, under the supervision of Mr.M.VinayKumar,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.

P.Ratnaraju	P.RATNARAJU	(133G1R0052)
Ruhi Rabia	RUHI RABIA	(133G1R0053)
R.pushpa	R.PUSHPA	(133G1R0054)
S.Sushmitha	S.SUSHMITHA	(133G1R0055)
Sk.Parvin Begum	SK.PARVINBEGUM	(133G1R0056)

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

5. CONCLUSION

- The preliminary Phytochemical screening of the crude extracts revealed the presence of saponins, steroids, flavanoids, carbohydrates, and tannins. The antibacterial and anthelmintic activity of *Acacia concinna* may be due to the presence of tannins, flavanoids and saponins.
- The results obtained in the experimental study of anthelmintic activity suggest that the aqueous, alcoholic and seed extracts of *Acacia concinna* has potent anthelmintic effect against the Indian earth worm, Pheretima posthuma.
- The alcoholic extract of Cassia auriculata was insoluble in the tested solvents of sterile water and in 10% DMSO so that it does not showed antibacterial and anthelmintic activity.
- The aqueous extract of Cassia auriculata has showed anthelmintic activity and antibacterial activity against Micrococcus luteus.
- From this it was concluded that, separation of components of the extracts and evaluation of their antibacterial and anthelmintic activities may lead to the development of new drugs against the bacterial strains and helminths.

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

I Year – I SEMESTER

T	P	C
3+1	0	3

HUMAN ANATOMY & PHYSIOLOGY - I

UNIT-I

Scope of anatomy and physiology: Structure of cell, its components and their function. **Elementary tissues of the human body**: Epithelial, connective, muscular and nervous tissues, their sub- types and properties.

08

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

04

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

04

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

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, Heamopoiesis and blood hormones, Blood groups and their significance, Coagulating factors, Pathways of coagulation and Mechanism of coagulation, Disorders of blood and its components disorders of coagulation.

08

LO : Blood is involved in oxygen and carbon dioxide transport, maintenance of B.P, defense immunity and excretion.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

UNIT III

Cardiovascular system:

Basic anatomy, structure and functions of the heart and blood vessels. Excitatory and conductive system of the heart, action potential in 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 like hypertension, hypotension, atherosclerosis, angina, myocardial infarction, congestive heart failure and cardiac arrhythmias.

08

Lymph and Lymphatic System: Composition, formation and circulation of lymph; disorders of lymph and lymphatic system. Basic physiology and functions of spleen. 03

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

UNIT IV

Respiratory System: Anatomy of respiratory organs. Functions of respiration, mechanism and regulation of respiration, respiratory volumes and vital capacity. 07

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

UNIT V

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, enzymes and secretions involved – their functions.

UNIT VI

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 extracellular fluid volume. Disease related to kidney.

05

LO : To understand how urine is formed and various mechanisms involved in formation of urine.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"A STUDY ON PRELIMINARY PHYTOCHEMICAL SCREENING & INVITRO ANTICOAGULANT ACTIVITY OF ETHANOLIC EXTRACT OF CLITOREA TERNATEA".

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

(2017)

Jawaharlal Nehru technological university, Kakinada.

By

SK.SAIRA BHANU (133G1R0057) *K. SINDHU (133G1R0058)*

S.RAMA KRISHNA (133G1R0059) *S.ANANTHA LAKSHMI (133G1R0060)*

T.DEEPIKA (133G1R0061)

Under the Guidance of

Mr. S. Nageswara Rao M.Pharm,.

Asst. Professor

Department Of Pharmacology

Aditya Pharmacy College

Surampalem – 533437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

2016-2017

CERTIFICATE

This is to certify that the dissertation entitled "A Study On Preliminary Phytochemical Screening & Anticoagulant Activity Of Ethanolic extracts Of Clitorea ternatea" 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 SK.SAIRA BHANU (133G1R0057),K.SINDHU(133G1R0058),S.RAMAKRISHNA (133G1R0059),S.ANANTHALAKSHMI(133G1R0060),T.DEEPIKA(133G1ROO61) under the supervision of* ***Mr. S. Nageswara Rao*** *M.Pharm and it has been previously not submitted to any other University or academic institution for any higher degree.*

Dr. K.Divakar, M.Pharm, Ph.D.
Principal & Professor,
Aditya Pharmacy College.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

Place: Surampalem

Date: 30/3/2017

Internal examiner

External examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

This is to certify that the dissertation entitled "A Study on Preliminary Phytochemical Screening & Invitro Anticoagulant Activity of Root Extracts of Clitorea ternatea" was carried out in the Department of Pharmacology under the guidance of Mr. S. Nageswara Rao, M.Pharm, Aditya Pharmacy College, Surampalem. The extent and smyce of information derived from the existence literature have been indicated throughout thesis of the project work at appropriate places.

SK. Saira bhanu — *SK.SAIRA BHANU (133G1R0057)*

K. Sindhu — *K. SINDHU (133G1R0058)*

S. Rama Krishna — *S.RAMA KRISHNA (133G1R0059)*

S. Anantha lakshmi — *S.ANANTHA LAKSHMI (133G1R0060)*

T. Deepika — *T.DEEPIKA (133G1R0061)*

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Discussion:

The prevalence of atherosclerosis and coronary artery diseases has focused attention on the influence of diet on the cardiovascular system. Natural anticoagulant agents that influence platelet function and inhibit coagulation process are of potential interest for primary prevention of cardiovascular diseases.

Clitoria ternatea is traditionally very important plant having many important pharmacological activities like antileprosy, anti-inflammatory, anthelmintic, immune modulatory, antiasthamatic, antidepressant and anti-convulsant, analgesic, antipyretic, antifungal, proteolytic, antihyperglycemic and antihyperlipidemic property. Many important phytoconstituents responsible for the activity were isolated. This proves therapeutic importance of the plant. Such type of systematic information about the plant is useful for the researchers.

The data presented in this study demonstrate that the ethanolic extract of *Clitoria ternatea* possess anticoagulant activity. The anticoagulant activity was performed by estimating the prothrombin time for fresh human blood. From the present study it was proved that the ethanolic extract had shown good anticoagulant activity near to that of standard solution warfarin rather than other extracts at a concentration of 400mg/ml. The results of anticoagulant activity were shown in table 5.5.

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – II SEMESTER	T	P	C
	3+1	0	3

PHARMACOGNOSY – II(50 Hrs)

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

UNIT I 08

Glycoside containing drugs:

a. **Saponin Glycosides** : Glycyrrhiza, Ginseng, Discorea, Sarasaparilla & Senega.

b. **Cardioactive Glycosides** : Digitalis, Squill, Strophanthus & Thevetia.

c. **Anthraquinone Glycosides** : Aloe, Senna, Rhubarb & Cascara.

d. **Bitter Glycosides** : Psoralea, Gentian & Chirata.

LO : To understand that Glycisides 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** : Belladona, 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.

PRINCIPAL
Aditya Pharmacy College
PEDDAPURAM 533 437

UNIT - III 04

Study of Tannins & Tannin containing drugs: Gambir, Black catechu, Myroblan&Arjuna. **Study of resins &drugs containing resins**: Benzoin, Asafoetida, Balsam of Tolu, Podophyllum.

ADITYA PHARMACY COLLEGE PEDDAPURAM

LO : To understand that Tannins and Resins and their combination products are produced by different plants.

UNIT- IV 02

Biological sources, 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 pharmaceuitcal importance.

Biosynthesis of -Tropane, Quinoline, Opium and Indole alkaloids, Steroids and Anthraquinone glycosides.

LO : To understand that Compounds of varied chemical nature are produced by plants (chemodiversity).

UNIT – VI 04

Study of plant fibers like cotton, cotton wood pulp, jute, hemp and flaxused in surgical dressing and related products.

Theapplications of natural dyes like turmeric, henna, saffron, cochineal and marigold in pharmacy.

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

TEXT BOOKS

1. Kokate C.K , Purohit AP &Gokhale, The Pharmacognosy S.B (Nirali)
2. Trease and Evans, Pharmacognosy, Latest Edition.
3. Tyler, Brady & Robert, Pharmacognosy.
4. Khare C.P, Indian Medicinal plants – An Illustrated dictionary.

REFERENCES

1. Atal C.K & Kapur B.M, Cultivation & Utilization of Medicinal Plants.
2. Wallis, Textbook of pharmacognosy, Pub by CBS Publishers and distributors, New Delhi.
3. Ayurvedic Pharmacopoeia of India, Pub by Govt. Of India.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ANTIBACTERIAL AND ANTHELMINTIC ACTIVITY OF *TERMINALIA ARJUNA LEAVES AND SAPINDUS TRIFOLIATUS ENDOSPERM*

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

(2017)

ADITYA PHARMACY COLLEGE
LIBRARY
ACC No. PR603
ADITYA NAGAR, SURAMPALEM

Jawaharlal Nehru Technological University, Kakinada A.P.,

BY

Thalla Geetha Mounika (133G1R0062)

Thale Swathi (133G1R0063)

Valavala Kranthi Teja (133G1R0064)

Vennela Jnaneswari (133G1R0065)

Vinny Therissa Mangam (133G1R0066)

Under the Guidance of

A.V.YAGNA PRIYA, M.Pharm

Asst. professor

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Department of pharmacognosy & phytochemistry

Aditya Pharmacy College

Surampalem- 533437

2013-2017

CERTIFICATE

This is to certify that the dissertation entitled "Antibacterial And Anthelmintic Activity of *Terminalia arjuna leaves And Sapindus trifoliatus endosperm*" 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 Thalla Geetha mounika (133G1R0062) Thale Swathi (133G1R0063) Valavala Kranthi Teja (133G1R0064) Vennela Jnaneswari (133G1R0065) Vinny Therissa Mangam (133G1R0066) under the supervision A.V.Yagna priya , M.Pharm, Department of pharmacognosy and phytochemistry, Aditya pharmacy college and it has been previously not submitted to any other university or academic institution for any higher degree.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533437

Place: Surampalem
Date:

Internal examiner

External examiner

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

The project embodied in this thesis entitled "Antibacterial and Anthelmintic Activity of *Terminalia arjuna leaves and Sapindus trifoliatus endosperm*" was carried out in the department of pharmacognosy and phytochemistry under the guidance of **A.V.YAGNA PRIYA** M.Pharm, Asst. professor, dept of pharmacognosy and phytochemistry, Aditya Pharmacy College, Surampalem. This work is original and has not been submitted in part or on full for any degree of this or any other university. The information furnished in this dissertation is genuine to the best of my knowledge and belief.

T. G. Mounika Geetha Mounika (133G1R0062)

T. Swathi Swathi Thale (133G1R0063)

V. Kranthi Teja Kranthi Teja (133G1R0064)

V. Jnaneswari Vennela Jnaneswari (133G1R0065)

M. Vinytherissa Vinny Therissa Mangam (133G1R0066)

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

- The preliminary phytochemical screening of the crude extract revealed the presence of carbohydrates, flavanoids and tannins. The anthelmintic activity of ethanolic extract of leaves of *T.arjuna*& *aqueous* extract of endosperm of sapindus trifoliatus may be due to the presence of tannins.
- The results obtained in the experimental study of anthelmintic activity suggest that the ethanolic extract of *T. arjuna* has beneficial anthelmintic effect against the Indian earth worm *Pheritima postuma*.
- The results obtained in the experimental study of antibacterial activity suggests that the ethanolic extract of leaves of T.arjuna and aqueous extract of endosperm of S.trifoliatus showed significant activity against all tested bacterial organisms.
- From this it was concluded that, separation of components of the extract and evaluation of their antibacterial and anthelmintic activities may lead into new agents against the bacterial strains and helminths.

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

IV Year –I SEMESTER

T	P	C
3+1	0	4

PHARMACEUTICAL ANALYSIS – II

UNIT – I

Visible, UV & IR Spectrophotometry: Principle, Electron Transition, Beer-Lamberts Law & Deviations, Chromophores, Instrumentation – Construction of Single Beam and Double Beam Spectrophotometers, Applications.

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

UNIT - II

NMR, Electron Spin Resonce Spectroscopy and Mass Spectrometry: Basic Principle, Instrumentation and Applications.

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

UNIT - III

Basic Principles and applications of differential thermal analysis (DTA) and differential scanning colorimetry (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 Sorbate Assay.

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

UNIT – IV

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

GLC, HPLC, HPTLC

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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

UNIT – VI

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. Silvesterin 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.

REFERENCES

1. Settle, Handbook of Instrumental Techniques for Analytical Chemistry.
2. Y.Anjaneyulu & Maraiah, Quality Assurance & Quality Management in Pharmaceutical Industry.
3. P.D. Sethi, Quantitative analysis of Drugs and Pharmaceuticals.
4. K. A. Connors, A Textbook of pharmaceutical analysis, Wiley Interscienc, NY.
5. A.M. Knevel & F.E. Digengl, Jenkin's quantitative pharmaceutical chemistry, Mc Graw Hill Book Co., NY.
6. Pharmacopoeia (IP, BP, USP, PhI, Eu. PhI).

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

METHOD DEVELOPMENT AND VALIDATION FOR NIMESULIDE IN BULK AND TABLET DOSAGE FORM USING REDUCTION FOLLOWED BY CONDENSATION METHOD

Dissertation Submitted to

ADITYA PHARMACY COLLEGE
LIBRARY
ACC No. PR605
ADITYA NAGAR, SURAMPALEM

JNT UNIVERSITY

KAKINADA

In partial fulfillment for the award of the degree of

BACHELOR OF PHARMACY

BY

V.Santhi Rekha(133G1R0067)

Y.Sravani(133G1R0068)

Y.Chandra Lekha(133G1R0069)

Y.Swetha(133G1R0070)

Govil T Elson Wanniang(133G1R0071)

Under the guidance of

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

Associate Professor

ADITYA
ENLIGHTENS THE NESCIENCE

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

Batch: 2013- 2017

ADITYA PHARMACY COLLEGE * SURAMPALEM - 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 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 **"METHOD DEVELOPMENT AND VALIDATION FOR NIMESULIDE IN BULK AND TABLET DOSAGE FORM USING REDUCTION FOLLOWED BY CONDENSATION METHOD"** submitted in partial fulfillment of the degree in Bachelor of Pharmacy of the JNT University, Kakinada for the academic year 2013-2017. This is a bonafide work carried out by V.Santhi Rekha, Y.Sravani, Y.Chandra Lekha, Y.swetha and Govil T Elson Wanniang, under the direct guidance and supervision of Dr. D. Sathis Kumar, M.Pharm., Ph.D., Associate Professor, Aditya Pharmacy College, Surampalem, Andhra Pradesh.

ADITYA PHARMACY COLLEGE • SURAMPALEM •

(Internal Examiner)

(External Examiner)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ABSTRACT

A simple, economic, accurate chemical derivatization method was developed for the Nimesulide in bulk and tablet dosage form. Zinc dust and Gibbs reagent were used for the chemical derivatization. The maximum absorption was observed at 400 nm. The linearity range was found to be 20 - 100 µg/ml. The proposed method was validated. The reports was expressed that the proposed method was found to be simple, precise, accurate and rapid for determination of Nimesulide from pure and its dosage forms.

Keywords: Nimesulide, Zinc Dust, Gibbs reagent, Tablet,

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

nclusion:

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – I SEMESTER	T	P	C
	3+1	0	3

PHARMACEUTICAL MICROBIOLOGY(50 Hrs)

UNIT – I 10

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

Diversity of Microorganisms: Prokaryotes versus eukaryotes – eukaryotic and Prokaryotic cell structure, three domains of life (bacteria, archea and eurkaryotics). Pharmaceutical significance of protozoa, algae, fungi, bacteria and viruses. Characterisation 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 determing bacterial numbers, mass and cell constitutents. 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, antisepsis 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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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

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

Application of Microbes in Pharmaceutical Industry

a. **Microbiological Assays:** Principles and Methods involved in Assay of Antibiotics,

   Vitamins, Amino acids & Bio-Sensors in Analysis.

b. **Microbial Source & applications of various pharma products** like Antibiotics,

   Vitamins, amino acids, solvents, enzymes & genetic engineered products etc.

LO : To understand that antibiotics/Vitamins can be standardized by microbial assays. And some useful products can be produced as a bacterial metabolites.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

OLIGODYNAMIC ACTION OF STEEL, COPPER AND BRASS ON ENTERIC BACTERIA ISOLATED FROM DIFFERENT WATER SOURCES

Dissertation Submitted to

JNT University, Kakinada

ADITYA PHARMACY COLLEGE
LIBRARY
ACC No. PR 607
ADITYA NAGAR, SURAMPALEM

IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE AWARD OF DEGREE OF

BACHELOR OF PHARMACY

SUBMITTED BY

K.SAI MAHESWARI
(133G1R0072)

SANOBAR MALLICK
(133G1R0074)

D. VINAY RANJAN
(133G1R0076)

U. RAGA SNIGDHA
(133G1R0078)

K.KIRAN KUMAR
(133G1R0079)

UNDER THE GUIDANCE OF

Mr.Y.SURENDRANATH REDDY, M. Pharmacy., (Ph.D.)

Associate Professor

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

ADITYA PHARMACY COLLEGE

SURAMPALEM, E.G. DISTRICT, ANDHRA PRADESH – 533 437

2013 - 2017

ADITYA PHARMACY COLLEGE

CERTIFICATE

This is to certify that project entitled as "OLIGODYNAMIC ACTION OF STEEL, COPPER AND BRASS ON ENTERIC BACTERIA ISOLATED FROM DIFFERENT WATER SOURCES" done by, K.SAI MAHESWARI, SANOBAR MALLICK,D.VINAY RANJAN,U.RAGA SNIGDHA, K.KIRAN KUMAR submitted in the partial fulfillment for the award of Degree of Bachelor of Pharmacy were carried out at our college under the guidance and the supervision of Mr.Y.Surendranath Reddy,Associate Professor, Aditya Pharmacy College, Surampalem during academic year 2013-2017.

(Internal Examiner)

(External Examiner)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE • SURAMPALEM •

DECLARATION

We hereby declare that the dissertation work entitled "OLIGODYNAMIC ACTION OF STEEL, COPPER AND BRASS ON ENTERIC BACTERIA ISOLATED FROM DIFFERENT WATER SOURCES" in partial fulfillment of the degree in Bachelor of Pharmacy of JNTUK University, Kakinada, 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 Y.Surendranath Reddy, Aditya Pharmacy College, Surampalem, Andhra Pradesh. We also declare that the matter embodied in it is a genuine work.

K.SAI MAHESWARI K. Saimaheswari

SANOBAR MALLICK Sanobar Mallick.

D.VINAY RANJAN D. Vinay Ranjan

U.RAGA SNIGDHA Snigdha

K.KIRAN KUMAR K. Kiran Kumar

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE

Summary and Conclusion

The present study, it was observed that the variation of turbidity on different water ources by using different anaerobic bacteria and fungi, it was found that copper vessel has own less turbidity (Bacterial growth) at different time intervals (0,48th hour)than Brass and eel vessels.

Brass vessel has shown less turbidity (Bacterial growth) than steel vessel at different me intervals, (0,48thhour).Steel has shown more turbidity (Bacterial growth) than copper vessel d Brass vessel at different time intervals (0,48thhour).

It was also observed that by increasing the volume i.e (0.1ml, 1ml, 10ml) showed s bacterial growth in copper vessel than Brass and Steel vessels at different time intervals 48th hour).Brass showed less turbidity (Bacterial growth) than steel vessel at different time tervals (0,48th hour) steel has showed more turbidity (Bacterial growth) than Brass vessels at fferent time intervals (0,48thhour).

The reason for selecting different water sources (Godavari water, Sea water, College mpus water, college hostel water) are:

ODAVARI WATER: We have selected Godavari water because it was getting polluted day by ay due to contamination of waste materials, Animal wash, clothes wash, Industrial waste aterials etc.so, by performing the experimental method using different vessels we conclude that pper showed resistance to the growth of microorganisms.

EA WATER: We have selected Sea water because it was getting polluted day by day due to ntamination of waste materials, Animal wash, clothes wash, Industrial waste materials etc. so, performing the experimental method using different vessels we conclude that copper showed sistance to the growth of Microorganisms.

OLLEGE CAMPUS WATER AND HOSTEL WATER: We have selected college campus and stel water because due to the storage of water in plastic pipe lines and in tanks it leads to ntamination with growth of microorganisms, so by performing the experimental method using fferent vessels we conclude that copper showed resistance to the growth of Microorganisms.

So we conclude that copper vessel is superior over Brass and stainless steel ssels in eliminating aerobic bacteria and fungi. Copper has the potential to provide crobiologically safe water and storage of water in copper vessels can be considered as a cost-fective, point-of-use water purification method. Therefore use of copper vessels to store eking water in households is strongly recommended.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

I Year – II SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL INORGANIC CHEMISTRY

UNIT-I

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

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

1. **Adsorbents:** Light kaolin, heavy kaolin and activated charcoal.
2. **Astringents:** Zinc oxide and Bismuth subcarbonate.
3. **Protectants:** Calamine, zinc oxide, zinc state, talc and titanium dioxide.
4. **Silicone polymers:** Activated Dimethicone.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

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:

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

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

Miscellaneous medicinal agents of inorganic nature:

Cisplatin (Antineoplastic), lithium carbonate (Antipsychotic), barium sulfate (diagnostic agent), plaster of paris (surgical aid), sodium auorthiomalate (antirheumatic), sodium antimonygluconate (internal parasiticid) 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 Athtone press, University of London, London.
2. Advanced Inorganic Chemistry by Satya Prakash, G.D.Tuli

PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM 533 43

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/30

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **SANOBAR MALLICK** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133GIR0074**.

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

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

We Wish Her A Bright Future.

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell :+91 91000 79876,+91 90002 15679+9 98855 24204, Phone :+91 40 - 40117938,

url :www.brightlabs .in email :bariphe[illegible]@gmail.com

TIN. No.:367[illegible]00886

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

IV Year –II	T	P	C
SEMESTER	3+1	3	3

QUALITY ASSURANCE, GMP & GLP

UNIT - I

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

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

UNIT - II

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

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

UNIT - III

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.

LO : 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

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.

LO : 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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

forms: sterile, biological products and non-sterile, standard operating procedures for various operations. Packaging and labeling controls.

UNIT - V

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.

LO : 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

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

LO : 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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 101602
: 503/U/12 (GMP Certified)

REF:BPL/IT/ADP-KKD/008

Date: 16 -06- 2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **YERUBANDI. SWETHA** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133G1R0070.**

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

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

We Wish Them A Bright Future.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BARIS PHARMACEUTICALS PVT. LTD.

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. Puram, Main Road,
Kothapet, Hyderabad - 500 035. Telangana State, India.
Cell : +91 91000 79870, +91 90002 15679 +91 98855 24204, Phone : +91 40 - 40117938,
url : www.brighthrbs.in, email : brighthrbs54@gmail.com
TIN. No.: 36796700886

III Year – I SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL MANAGEMENT

UNIT - I

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.

LO : To understand business organization – types – functions.

UNIT - II

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.

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

UNIT - III

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

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

UNIT - IV

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.

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

UNIT - V

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

manufacture of basic drugs, synthetic and drugs of vegetable origin. Export and import of drugs and pharmaceuticals – Export and import trade.

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

UNIT - VI

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.

LO : To understand insurance – types – health insurance – association and society governing pharmacy profession.

TEXT BOOK

1. Aryasri and Subbarao, Pharmaceutical Administration, TMH.
2. Smarta, Strategic Pharma Marketing.
3. G.Vidya Sagar, Pharmaceutical Industrial Management.

REFERENCES

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

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/26

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **PALATLA KRISHNA AISHWARYA** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133GIR0046**.

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

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

We Wish HerA Bright Future.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell :+91 91000 79876/+91 90002 15679/+9 98855 24204, Phone :+91 40 - 40117938,

url :www.brightlabs.in email :bariphd54@gmail.com

TIN. No.:36796700886

I Year – II SEMESTER	T	P	C
	3+1	0	3

PHYSICAL PHARMACY – I (50 Hrs)

UNIT I

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. 10

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

UNIT - II

Thermodynamics: The first law of thermodynamics. Thermochemistry.The second law of thermodynamics.The third law of thermodynamics, Free energy functions and applications. 10

LO : To understand laws of Thermodynamics and their Applications

UNIT - III

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. 06

UNIT - IV

Solutions of Non electrolytes: Concentration expressions, ideal and real solutions, colligative properties, molecular weight determinations.

06

LO : To understand properties of Non electrolytes and their significance

UNIT - V

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.

08

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

ADITYA PHARMACY COLLEGE SURAMPALEM
PRINCIPAL
Aditya Pharmacy College

UNIT - VI

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).

10

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

TEXT BOOKS

1. Patrick J. Sinko, Martin's Physical Pharmacy and Pharmaceutical Sciences Fifth Edition.
2. C.V.S.Subramanyam, Essentials of Physical Pharmacy, Vallabh Prakashan.
3. E. Shotton and K. Ridgaway, Physical Pharmaceutics, Oxford University Press, London.
4. S. J Carter, Cooper and Gunn's Tutorial pharmacy.

REFERENCES

1. Pharmacopoeia, (I.P., B.P., U.S.P. and European.)
2. Derle Deeliprao, Essentials of Physical Pharmacy
3. B.S Bahl, ArunBahl and G.D Tuli, Essentials of Physical Chemistry.
4. Pharmacopoeia (I.P, B.P, U.S.P and European)
5. Martindale, the Extra Pharmacopoeia; Latest Edition the Royal Pharmaceutical Society
6. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences
7. Robin J. Haiwan, Hand Book of Pharmacy and Health Care Edition, ThePharma Press, U.K.
8. Bentley's Text Book of Pharmaceutics by E.A. Rawlins

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Biological E. Limited

TO WHOM IT MAY CONCERN

CERTIFICATE

This is to certify that Ms. GONNURI ANUSHA student of B.Pharmacy, from Adithya Pharmacy College. Surampalam, Rajahmundry has completed her Industrial Training in our Quality Control and Pharma Production Department.

Ms. GONNURI ANUSHA completed her Industrial Training in our Pharma Production Department from 26th May, 2017 to 25th June, 2017.

During the above period we found Ms. Ms. GONNURI ANUSHA's conduct good and she was very diligent and sincere in learning the functions of Quality Control and Pharma Production Department.

With Best wishes,

For BIOLOGICAL E. LIMITED

A.V. MOHAN 27/6

Dy. General Manager – H.R

Date :27-6-2017

ADITYA PHARMACY COLLEGE * SURAMPALEM * 533433

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 433

18/183, Azamabad, Hyderabact-500 020 Telangana, India. Tel: +91 40 3021 3999
Fax: +91 40 2761 5309, e-mail: info@biologicale.co.in www biologicale.com

Celebrating Life Every Day

I Year – I SEMESTER	T	P	C
	3+1	0	3

PHARMACEUTICAL ORGANIC CHEMISTRY-I

UNIT-I

Structure and reactivity of organic molecules: 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

Alkanes and cycloalkanes: Nomenclature, general methods of preparation, chain and conformational isomerism in the case of alkenes and their relative stabilities, Bayer'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 one 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

Alkylhalides: Nomenclature, general methods of preparation, significance of nucleophilic subsititution 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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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.

UNIT-IV

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's synthesis, action of hydroiodic acid on ethers.

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

UNIT-V

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

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. T.R. Morrison and R.N. Boyd, Organic chemistry, pentice hall of India private limited, New Delhi.
2. Arun Bahl & Bahl, Advanced Pharmaceutical Organic Chemistry.

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
SURAMPALEM-533 437

KDPL Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.
(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/030 Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. UPPALAPATI RAGA SNIGDHA is a bonafide student of *ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist, Andhra Pradesh* . She has undergone industrial training in our organization from 16-5-2016 TO 16-06-2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No **133G1 R0078.**

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

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

We Wish Them A Bright Future.

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd. KDPL * Hyd. *

ADITYA PHARMACY COLLEGE * SURAMPALEM * M.S.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

H.No. 11.13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Website: www.kdplpharma.com, e-mail : kdplpharma@gmail.com

I Year – II SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL ORGANIC CHEMISTRY-II

UNIT-I

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 monosubstituted 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

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

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

Phenols: Nomenclature, general methods of preparation, industrial synthesis of phenol by Dow process, characteristic reactions (acidity and its

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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.

UNIT-V

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

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. T.R.Morrison and R.N.Boyd, Organic chemistry, pentice hall of India private limited, New Delhi.
2. Arun Bahl & Bahl, Advanced Pharmaceutical Organic Chemistry.

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.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.

(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/030

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. THALISETTI DEEPIKA is a bonafide student of *ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist, Andhra Pradesh* . She has undergone industrial training in our organization from 16-5-2016 TO 16-06-2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No **133G1 R0061.**

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

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

We Wish Them A Bright Future.

S.V.I

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd. KDPL Hyd.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

H.No. 11.13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Website: www.kdplpharma.com, e-mail : kdplpharma@gmail.com

II Year – II SEMESTER

T	P	C
3+1	0	3

HEALTH EDUCATION & PATHOPHYSIOLOGY(50 Hrs)

UNIT-I

Concepts of health & disease: Disease causing agents and prevention of disease. 05

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 05

Demography and family planning: 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: 10

i) Causes, pathogenesis and morphology of cell injury.
ii) Abnormalities in lipoproteinemia, glycogen infiltration and glycogen storage disease.
iii) Cellular adaptations, atrophy, hypertrophy.
iv) Disturbances of growth of cells
v) General biology of tumors
vi) Differences between benign and malignant tumors
vii) Classification of tumors
viii) Etiology and pathogenesis of cancer
ix) Patterns of spread of cancer.

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

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.

(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/035 Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. SIRIKI RAMA KRISHNA is a bonafide student of *ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist, Andhra Pradesh* . he has undergone industrial training in our organization from 16-05-2016 TO 16-06-2016, as part of partial fulfillment of his B. Pharmacy course bearing Hall Ticket No **133G1 R0059.**

During the training period he had interacted with Quality control, Quality Assurance & Production Departments Incharges and acquired basic knowledge in these areas.

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

We Wish Them A Bright Future.

S.V.

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd. KDPL * Hyd. *

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

H.No. 11.13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Website: www.kdplpharma.com, e-mail : kdplpharma@gmail.com

I Year – I SEMESTER

T	P	C
3+1	0	3

DISPENSING PHARMACY & ETHICS

UNIT-I

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

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

UNIT-II

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.
(ii) emulsions (iv) powders (v) lotions & liniments (vi) ointments

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

Unit-III

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

Solids : Tablet 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-IV

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

LO : To understand incompatibility and methods of overcoming incompatibility.

UNIT-V

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.

UNIT-VI

Pharmacy Ethics as prescribed by PCI.

LO: To understand Ethics related to Pharmacy profession as prescribed by PCI.

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.

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.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DR. REDDY'S

CERTIFICATE OF TRAINING

This is to certify that MERETI SAI SUDHA SRIDEVI

undergone training programme on

Instrumental & Chemical Analysis

from 17th Oct - 2016 to 16th Nov - 16

Organized by DR.Reddy's Laboratories Ltd, Hyderabad. During trainig programme, the candidate was imparted training

on HPLC, U-V & wet Analysis

The performance of the candidate durining the training period was found to be satisfactory.

Ast.MANAGER
ASST. MANAGER
Dr. REDDY'S LABORATORIES LTD.
BACHUPALLY
HYDERABAD - 500 072

Dr. Reddy's Laboratories Ltd. Dt.: Bachupalli. HYD.

INSTRUCTOR

Dr. Reddys Laboratories Ltd. in Bachupally, Hyderabad-500072

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – I SEMESTER

T	P	C
3+1	0	3

PHYSICAL PHARMACY -II(50 Hrs)

UNIT-I

08

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.

UNIT-II

Kinetics: Rates and orders of the reaction. Influence of temperature and other factors on reaction rates. Decomposition and stabilization of medicinal agents, kinetics in the solid state and accelerated stability analysis (relevant numerical problems). 10

LO : To understand kinetic rates, order of reaction, decomposition pathways and methods of stabilization, stability testing methods, accelerated stability analysis.

UNIT-III

Interfacial Phenomena: Liquid interfaces, measurement of surface and interfacial tensions, adsorption at liquid interfaces. Surface active agents and systems of hydrophilic-lipophillic classification. Adsorption at solid interfaces. Electrical properties of interfaces. 08

LO : To understand theory of interfacial phenomenon, absorption, surfactants and theoretical properties of interfaces.

UNIT-IV

Micromeritics: Particle size and size distribution, methods for determining surface area, methods for determining particle size, pore size, particle shape and surface area, derived properties of powders.

08

LO : To learn micromeritic characteristics and their applications and significance.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

UNIT-V

Rheology: Newtonian system, non-Newtonian system, thixotrophy, measurement and applications in formulations. Determination of viscosity and its applications. 08

LO : To understand rheology, types of flow, thixotrophy, its applications and viscosity.

UNIT –VI

Colloids: Introduction, types of colloidal systems, solubilization, Stability of colloids, optical properties, kinetic properties, electrical properties and Donnan Membrane equilibraium. 08

LO : To know colloids – types – properties – stability considerations.

TEXT BOOKS

1. Patrick J. Sinko, Martin's Physical Pharmacy and Pharmaceutical Sciences 5 Edition.
2. CVS Subhramanyam, Physical Pharmacy, Vallabhprakashan.
3. DeelipRaoDerle&Sai hanuman SagarBoddu. Essentials of Physical Pharmacy.
4. B. S. Bahl, Arunbahl and G. D. Tuli. Essentials of Physical Chemistry.

REFERENCE

1. Lippincott Williams and Wilkins, Remington Pharmaceutical Sciences
2. M.E. Aulton, Pharmaceutics – The science of dosage form design, 2edition
3. Bentley's text book of Pharmaceutics. E. A. Rawlins.
4. E. Shotton and K. Ridgaway, Physical Pharmaceutics, Oxford University Press, London.
5. Pharmacopoiea (IP, BP, USP and European).

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DR. REDDY'S

CERTIFICATE OF TRAINING

This is to certify that JOKA MANIKANTA SRUTHI

undergone training programme on

Instrumental & Chemical Analysis

from 17th oct - 2016 to 16th Nov - 16

Organized by DR.Reddy's Laboratories Ltd, Hyderabad. During trainig programme, the candidate was imparted training

on HPLC, U.V & Wet Analysis

The performance of the candidate durining the training

period was found to be satisfactory.

Ast.MANAGER

ASST. MANAGER
Dr. REDDY'S LABORATORIES LTD.
BACHUPALLY
HYDERABAD - 500 072.

Dr. Reddy's Laboratories Ltd. Bachupally, HYD.

INSTRUCTOR

Dr. Reddys Laboratories Ltd. in Bachupally, Hyderabad-500072

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

II Year – I SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL UNIT OPERATIONS –I (50 Hrs)

UNIT-I 08

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

Material handling systems: 10

a. Liquid handling -different types of pumps.

b. Gas handling -various types of fans, blowers and compressors.

c. Solid handling -conveyors

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

UNIT-III 10

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 sedimeters.

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

UNIT-IV 10

Crystalization: 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.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

UNIT-V

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.

03

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

Refrigeration and Air Conditioning:

Principles and applications of refrigeration and air conditioning.

02

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

UNIT-VI

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. 04

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

03

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

13-6

DR. REDDY'S

CERTIFICATE OF TRAINING

This is to certify that CHEEKA DHANA SUBRAHMANYESWARI

undergone training programme on

Instrumental and chemical analysis

from 17th oct - 2016 to 16th Nov - 16

Organized by DR.Reddy's Laboratories Ltd, Hyderabad. During trainig programme, the candidate was imparted training on HPLC, U.V & wet analysis.

The performance of the candidate durining the training period was found to be satisfactory.

Ast.MANAGER
ASST. MANAGER
Dr. REDDY'S LABORATORIES LTD,
BACHUPALLY
HYDERABAD - 500 072.

Dr. Reddy's Laboratories Ltd. Bachupally, HYD.

INSTRUCTOR

Dr. Reddys Laboratories Ltd. in Bachupally, Hyderabad-500072

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

III Year – I SEMESTER

T	P	C
0	3	2

PHARMACEUTICAL BIOCHEMISTRY LAB

Experiments:

1. To prepare standard buffers (citrate, phosphate & carbonate) and measure the pH.
2. Titration curve for amino acids.
3. Separation of amino acids by two dimensional paper chromatography & gel

   electrophoesis.
4. The separation of lipids by T.L.C.
5. Identification of carbohydrates
6. Identification of amino acids.
7. Identification of lipids.
8. Estimation of glucose in urine.
9. Estimation of creatinine in urine.
10. Estimation of urea in blood.
11. Estimation of creatinine in blood.
12. Estimation of Serum protein.
13. Estimation of bile pigments in serum.
14. Estimation of alkaline phosphatase in serum
15. Effect of temperature on the activity of alpha-amylase.

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/28

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **VINNY THERISSA MANGAM** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133G1R0066**

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

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

We Wish Her A Bright Future.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell : +91 91000 79876, +91 90002 15679 +9 98855 24204, Phone : +91 40 - 40117938,

url : www.brightlabs .in email : bariphd54@gmail.com

TIN. No.:36796700886

III Year –II SEMESTER	T	P	C
	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, tablets, parenterals, microcapsules etc.
2. Evaluation of materials used in pharmaceutical packaging.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

13-16

DR. REDDY'S

CERTIFICATE OF TRAINING

This is to certify that GANGU NARESH

undergone training programme on

Instrumental and Chemical analysis

from 15th - MAY - 2017 to 14th - June - 2017

Organized by DR.Reddy's Laboratories Ltd, Hyderabad. During trainig programme, the candidate was imparted training on HPLC, U.V & Wet Analysis

The performance of the candidate durining the training period was found to be satisfactory.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

Ast.MANAGER
ASST. MANAGER
Dr. REDDY'S LABORATORIES LTD.
BACHUPALLY
HYDERABAD - 500 072.

Dr. Reddy's Laboratories Ltd. * Bachupally, HYD. *

INSTRUCTOR

III Year – I SEMESTER

T	P	C
0	3	2

PHARMACEUTICAL TECHNOLOGY – I LAB

A total of atleast 50 preparations are to be prepared belonging to various categories.

Preparation, evaluation and packaging of solutions, suspensions and emulsions, ointments. Suppositories, aerosols, eye drops, eye ointments etc. Formulation of various types of cosmetics for skin, hair, dentrifices and manicure preparations.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.

(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/036 Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. THALE SWATHI is a bonafide student of *ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist, Andhra Pradesh* . She has undergone industrial training in our organization from 16-5-2016 TO 16-06-2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No **133G1 R0063.**

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

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

We Wish Them A Bright Future.

S.V

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd. KDPL * Hyd. *

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

H.No. 11.13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Website: www.kdplpharma.com, e-mail : kdplpharma@gmail.com

III Year –II SEMESTER

T	P	C
0	3	2

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.
14. Separation techniques : Various types of Gel Electrophoresis, Centrifugation.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/24

Date: 16.06.2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **MOHAMMEDMUNEERA NASHEEN** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133GIR0036**.

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

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

We Wish HerA Bright Future.

BARIS PHARMACEUTICALS PVT. LTD.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell :+91 91000 79876;+91 90002 15679 +9 98855 24204, Phone :+91 40 - 40117938,

url :www.brightlabs.in email :bariphd54@gmail.com

TIN. No.:36796700886

IV Year –I SEMESTER

T	P	C
3+1	0	4

CHEMISTRY OF NATURAL PRODUCTS

UNIT-I

Carbohydrates : Classification and general properties. Knowledge of structure including Sterio Chemistry of glucose. General treatment of pharmaceutically important carbohydrates-maltose, lactose, starch, cellulose and dextrin.

LO : Introduction, basic understanding, structures, features, stabilities and uses.

UNIT-II

Amino acids and proteins : Classification and general reactions of amino acids and their relationship to proteins and polypeptides. Methods of preparation of amino acids, classification and general reactions of proteins, degradation of proteins-hydrolysis and end group analysis-protein hormones, oxytocin.

LO : Introduction, basic understanding, structures, features and uses.

UNIT-III

1. **Purines and xanthine derivatives:** Structure and synthesis of uric acid, Theobromine, theophylline, and caffeine. General aspects of nucleoproteins and nucleic acids,
2. **Lipids:** Fixed oils and fats. Fatty acids: chemistry and analysis of oils and fats.

LO : Introduction, basic understanding, structures, methodologies, significance and uses.

UNIT-IV

Terpenes : Occurrence, general methods of isolation and classification, chemistry of citral, limonene, ∝-terpeneiol, carvone, camphor and menthol.

LO : Introduction, basic understanding, structures, chemistry and structural features, important degradative reactions, uses.

UNIT-V

Alkaloids : Classification, general methods of isolation, general methods of structural determination, chemical tests for alkaloids, Chemistry and uses of Ephedrine, Nicotine, Papaverine and Atropine.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

LO : Introduction, basic understanding, structures, chemistry and structural features, important degradative reactions, uses.

UNIT-VI

1. Vitamins: Classification, chemistry, physiological role and uses of Thiamine, Riboflavin and Ascorbic acid. Skeletal structures of vitamins official in I.P.
2. Steroids: Nomenclature and skeletal structures of Ergosterol, Stigmasterol, Cholesterol Diosgenin, Hecogenin. Chemical tests for steroids.

LO : Introduction, basic understanding, structures, chemistry and structural features, important degradative reactions, uses.

TEXT BOOKS

1. O.P.Agarwal, Natural products by. Vol.1 & 2, Goel publications – Meerut.
2. JB Harborne, Phyto Chemical methods.
3. I L Finar, Organic chemistry, Vol. 1 & 2, the English language book society, London, New Delhi.

REFERENCES

1. RT Morrison and R.N BOYD, Organic chemistry, Allyn and Bacon, inc., boston
2. Me – Wolf, ed., Burger's medicinal chemistry, J. Wiley & sons, NY.
3. F.G. Mann & B. Saunders, Practical Organic chemistry Longmans green & Co. Ltd., UK.
4. RM. Acheson, an introduction to the chemistry of heterocyclic compounds, Interscience NY.
5. Duquesn & others, Practical Pharmacognosy, CBS Publ.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/19

Date: 16.06.2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **MACHIKALAPUDI VENKATA APARNA LASKHMI** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** She has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133GIR0032.**

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

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

We Wish HerA Bright Future.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell :+91 91000 79876/+91 90002 15679+9 98855 24204, Phone :+91 40 - 40117938,

url :www.brightlabs .in email :bariphd54@gmail.com

TIN. No.:36796700886

IV Year –I SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL JURISPRUDENCE

UNIT-I

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

Pharmacy Act 1948 and Drugs (Price control) order.

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

UNIT-III

Drugs and Cosmetics Act 1940 and Rules 1945

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

UNIT-IV

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.

UNIT-V

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

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

UNIT-VI

A study of the salient features of the following.

a. Prevention of Cruelty to animals Act 1960

ADITYA PHARMACY COLLEGE SURAMPALEM
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

b. AP State Shops & Establishments Act 1988 & Rules 1990.
c. Factories Act 1948.
d. WTO, GATT and The Indian Patents Act 1970
e. Pharmaceutical Policy 2002.

LO : To understand the salient features of the above.

TEXT BOOKS

1. B.M.Mithal, Text book of Forensic Pharmacy, publ by Vallabh Prakashan.
2. Prof. Suresh Kumar J.N, Text book of Forensic Pharmacy by Frontline publications.
3. 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).

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/45

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **MANCHALA SAINISHA** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** *She* has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133G1R0031**.

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

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

We Wish HerA Bright Future.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell : +91 91000 79876, +91 90002 15679 +9 98855 24204, Phone : +91 40 - 40117938,

url : www.brightlabs.in email : bariphd54@gmail.com

TIN. No.:36796700886

IV Year –I SEMESTER

T	P	C
0	3	2

PHARMACEUTICAL ANALYSIS – II LAB

Experiments

1. Interpretation of IR Spectra.
2. Determination of λ- max of a drug.
3. Determination of concentration of glycerine by Abbe's refractometer.
4. Assay of ibuprofen - UV-spectro photometry.
5. Assay of paracetomol - UV-spectro photometry.
6. Assay of riboflavin - Colorimetric method.
7. Assay of rifampicin - Colorimetric method.
8. Ascending paper chromatography.
9. Radial paper chromatography.
10. Two dimension chromatography
11. Thin layer chromatography.
12. Column chromatography (***Demonstration Only***).
13. Paper electrophoresis of amino acids.
14. Gel electrophoresis (***Demonstration Only***).
15. HPLC ***(Demonstration Only)***.

ADITYA PHARMACY COLLEGE • SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

BARIS
PHARMACEUTICALS PVT. LTD.

DL No. : AP/25/02/2012 - 1602
: 503/U/12 (GMP Certified)

REF: BPIJIT/ADP-KKD/44

Date: 16-06-2016

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Mr. **KARUPALLI PRADEEP** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh,*** He has undergone industrial training in our organization from 16 May 2016 to 16 June 2016, as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No. **133GIR0028**.

During the training period he had interacted with Quality control, Quality Assurance & Production Departments Incharges and acquired basic knowledge in these areas.

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

We Wish Him A Bright Future.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

11-13-1426, Nirmal Sadan, Near Ashta Lakshmi Temple Arch, R.K. puram, Main Road, Kothapet
Hyderabad - 500 035. Telangana State, India.

Cell :+91 91000 79876,+91 90002 15679 +9 98855 24204, Phone :+91 40 - 40117938,

url :www.brightlabs.in email :bariphd54@gmail.com

TIN. No.:36796700886

III Year – I SEMESTER

T	P	C
3+1	0	3

PHARMACEUTICAL BIOCHEMISTRY

UNIT - I

Introduction to Biochemistry: Outlines of the biochemsitry 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

Brief chemistry of carbohydrates

Carbohydrate metabolism: Brief chemistry, 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 - III

Lipids, Proteins and nucleoproteins: Principles involved in biological oxidation.

Lipid metabolism: Brief chemistry, 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 - IV

Protein Metabolism: Protein turnover. Ketabolism 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 - V

1. Enzymes: Classification, mode of action, factors affecting enzymes action, Coenzymes.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

2. Brief outline of Energy rich compounds, Phosphate metabolism and detoxification mechanisms of the body.

LO : Introduction, properties, classes, biochemical role and mode of action.

UNIT - VI

1. Cell division and metastasis.
2. Biomolecules: Biological functions of Nucleic acids, Vitamins & Minerals.
3. Detoxification mechanisms and their biological significance.

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

TEXT BOOKS

2. Harper, Biochemistry
3. A.L. Lehninger, Principles of Biochemistry.
4. J.L .Jain, Fundamentals of Biochemistry
5. Satyanarayana, Text Book of Biochemistry
6. Rama Rao, Text Book of Bio Chemistry.
7. 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.

ADITYA PHARMACY COLLEGE
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

13-21

Biological E. Limited

TO WHOM IT MAY CONCERN

CERTIFICATE

This is to certify that Ms. KANCHARLA SRI SAI SURYA SANDHYA student of B.Pharmacy, from Adithya Pharmacy College. Surampalam, Rajahmundry has completed her Industrial Training in our Quality Control and Pharma Production Department.

Ms. KANCHARLA SRI SAI SURYA SANDHYA completed her Industrial Training in our Pharma Production Department from 26th May, 2017 to 25th June, 2017.

During the above period we found Ms. Ms. KANCHARLA SRI SAI SURYA SANDHYA's conduct good and she was very diligent and sincere in learning the functions of Quality Control and Pharma Production Department.

With Best wishes,

For BIOLOGICAL E. LIMITED

A.V. MOHAN 27/6

Dy. General Manager – H.R

Date :27-6-2017

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

18/183, Azamabad, Hyderabact-500 020 Telangana, India. Tel: +91 40 3021 3999
Fax: +91 40 2761 5309, e-mail: info@biologicate.co.in www biologicale.com

Celebrating Life Every Day

III Year – I SEMESTER

T	P	C
3+1	0	3

MEDICINAL CHEMISTRY-II

UNIT - I

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

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

1. **Antiviral agents:** Acyclovir, Zidovudine, Idoxuridine and Amantadine.
2. **Cytostatic agents:** Chlorambucil, Cyclophospamide, Carmustine, 5-Flouro 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

Antibiotics:

1. **Penicillins:** Ampicillin, Amoxycillin

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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.

UNIT - V

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

Fat soluble vitamins: structures of Vitamin A, Retinoic acid, Vitamin D, Ergosterol

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

TEXT BOOKS

1. William O. Foye, Textbook of Medicinal Chemistry, Lea & Febiger, Philadelphia.
2. JH Block & JM Beale, Wilson & Giswold's Text book of organic Medicinal Chemistry and

   pharmaceutical chemistry by (Eds), 11th Ed, Lipincott, Raven, Philadelphia, 2004.
3. S. N. Pandeya, Textbook of medicinal chemistry, SG Publ. Varanasi, 2003.
4. Sri Ram, Medicinal Chemistry.
5. Rama Rao Nadendla, Medicinal Chemistry.

ADITYA PHARMACY COLLEGE
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

13-30

Biological E. Limited

TO WHOM IT MAY CONCERN

CERTIFICATE

This is to certify that Ms. MADIREDDY VIJAYA KARUNA student of B.Pharmacy, from Adithya Pharmacy College. Surampalam, Rajahmundry has completed her Industrial Training in our Quality Control and Pharma Production Department.

Ms. MADIREDDY VIJAYA KARUNA completed her Industrial Training in our Pharma Production Department from 26th May, 2017 to 25th June, 2017.

During the above period we found Ms. MADIREDDY VIJAYA KARUNA's conduct good and she was very diligent and sincere in learning the functions of Quality Control and Pharma Production Department.

With Best wishes,

For BIOLOGICAL E. LIMITED

A.V. MOHAN 27/6

Dy. General Manager – H.R

Date :27-6-2017

ADITYA PHARMACY COLLEGE • RAJAHMUNDRY • E.G.DIST

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

18/183, Azamabad, Hyderabact-500 020 Telangana, India. Tel: +91 40 3021 3999
Fax: +91 40 2761 5309, e-mail: info@biologlcate.co.in www biologicale.com

Celebrating Life Every Day

I Year – II SEMESTER

T	P	C
3+1	0	3

COMPUTER APPLICATIONS AND BIOSTATISTICS

Unit-I

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

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

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

Data collection and treatment: Significant digits and rounding of numbers, data collection, random and non-random sampling methods, sample size, data

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

organization, diagrammatic representation of data, bar, pie, 2-D and 3-D diagrams.

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

LO : Fundamentals of date / Sample collection and diagrammatic presentation.Measures of central tendency and dispersion.

Unit-V

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

Statistical Quality control: Statistical Quality control charts like mean and range charts, p-chart, np-chart and c-chart. Applications of Statistical Quality control in pharmaceutical sciences.

LO : Correlation and regression quality control charts in pharmacy.

Unit-VI

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

Elements of ANOVA: One-way and two-way with examples.

LO: Application of t-test, Chi square test and approve in the 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, L Satyanarayana.
3. Introduction to Information Technology, ITL Education Solutions Ltd., 2nd Ed, PEARSON
4. Comdex Information Technology, Vikas Gupta, dreamtech.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

KDPL
Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.
(AN ISO 9001:2008 CERTIFIED COMPANY)

REF: KDPL/IT/ADP-KKD/067

Date: **16-06-2016**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. GOVIL T ELSON WANNIANG** is a bonafide student of ***ADITYA PHARMACY COLLEGE, ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh*** . He has undergone industrial training in our organization from **16-5-2016 TO 16-06-2016,** as part of partial fulfillment of him B. Pharmacy course bearing Hall Ticket No **133G1R0071.**

During the training period he had interacted with Quality control, Quality Assurance & Production Departments Incharges and acquired basic knowledge in these areas.

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

We Wish Them A Bright Future.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

Karthikeya Drugs & Pharmaceuticals Pvt. Ltd. KDPL * Hyd. *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

H.No. 11-13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163

II Year – I SEMESTER

T	P	C
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 medias.
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) Vogesproskauer test.
    - iv) Starch hydrolysis test.
    - v) Fermentation of carbohydrates.
14. Morphology of molds, yeasts.
15. Preseravation of microrganisms (slant and stab cultures).

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

KDPL
Karthikeya Drugs & Pharmaceuticals Pvt. Ltd.
(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/019

Date: **16-06-2016**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that Miss. **SHAIK.SAIRABHANU** is a bonafide student of ***ADITYA PHARMACY COLLEGE,ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh*** . She has undergone industrial training in our organization from **16-5-2016 TO 16-06-2016,** as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No **133G1R0057.**

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

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

We Wish Them A Bright Future.

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

H.No. 11-13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Website: www.kdplpharma.com, e-mail : kdplpharma@gmail.com

II Year – II SEMESTER

T	P	C
0	3	2

PHARMACEUTICAL UNIT OPERATIONS - LAB

1. Measurement of flow of fluids and their pressure, determination of Reynolds's number and calculation of frictional losses.
2. Evaluation of filter media, determination of rate of filtration and study of factors affecting filtration including filter aids.
3. Experiments to demonstrate applications of centrifugation.
4. Determination of Humidity-use of Dry Bulb and Wet Bulb thermometers and Psychometric charts.
5. Determination of overall Heat Transfer Coefficient.
6. Determination of rate of evaporation.
7. Experiments based on steam. Extractive and Azeotropic distillations.
8. Determination of rate of drying, free moisture content and bound moisture content.
9. Experiments to illustrate the influence of various parameters on the time of drying.
10. Experiments to illustrate principles of size reduction, Laws governing energy and power requirements of a size reduction.
11. Experiments to illustrate solid-solid mixing, determination of mixing efficiency using different types of mixers.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

KDPL
Karthikeya Drugs & Pharmaceuticals Pvt. Ltd
(AN ISO 9001:2008 CERTIFIED COMPANY)

REF:KDPL/IT/ADP-KKD/018

Date: **16-06-2016**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Miss. SHEIK.PARVIN BEGUM** is a bonafide student of ***ADITYA PHARMACY COLLEGE,ADB Road, Aditya Nagar, Surampalem, Peddapuram, East Godavari Dist., Andhra Pradesh*** . She has undergone industrial training in our organization from **16-5-2016 TO 16-06-2016,** as part of partial fulfillment of her B. Pharmacy course bearing Hall Ticket No **133G1R0056.**

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

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

We Wish Them A Bright Future.

Aditya Pharmacy College
SURAMPALEM-533 437

H.No. 11-13-1427, 2nd Floor, Nirmal Sadan, Margadarshi Colony, Kothapet, Hyderabad-035.
Contact: 040-40117938, 8885111163, 7207111163, 8143611163, 8019111163
Web site: www.kdplpharma.com e-mail : kdplpharma@gmail.com

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

PRINCIPAL
Aditya Pharmacy College
KAKINADA-PALEM 533 437

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 (Quadrpole, 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 13CNMR: Spin spin and spin lattice relaxation phenomenon. 13C 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 - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. 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. Paviya, 5th Edition.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Stability Indicating method and validation for the estimation of Escitalopram and L-methyl Folate in bulk and Pharmaceutical dosage form using RPHPLC

A Dissertation Submitted to

JNT UNIVERSITY
Kakinada

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

Master of Pharmacy

In

Pharmaceutical Analysis and Quality Assurance

By

Doppa D V S Roopa Sirisha
(Reg. No. 153G1S0401)

Under the Supervision of

Dr. D. SATHIS KUMAR, M.Pharm., Ph.D.,
Associate Professor, Institutional Guide

Dr. S. Sridhar, Ph.D.,
Scientist, Industrial Guide

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Department of Pharmaceutical Analysis and Quality Assurance
Aditya Pharmacy College, Aditya Nagar, Surampalem 533437

2015- 2017

ADITYA PHARMACY COLLEGE

(Approved by PCI & AICTE and affiliated to JNTUK)

Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P. Pin: 533 437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"Stability Indicating method and validation for the estimation of Escitalopram and L-methyl Folate in bulk and Pharmaceutical dosage form using RPHPLC"** is submitted to the JNT University, Kakinada in partial fulfillment for the award of the degree of **Masters of Pharmacy** in **Pharmaceutical analysis and Quality assurance.** This is a bonafide work carried out by **Doppa D V S Roopa Sirisha** bearing Reg.No. **153GIS0401** under the guidance and supervisionof **Dr. D. Sathis Kumar,** Associate Professor, Department of Pharmaceutical Analysis and Quality Assurance, Aditya Pharmacy College, Surampalem.

Date:

Place: Surampalem

Signature of evaluators

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

1. 15/9/17

2. 15/9/17

ABSTRACT

A simple, Accurate, precise method was developed for the simultaneous estimation of the Escitalopram and L-methylfolate in Tablet dosage form. Chromatogram was run through Discovery 250mm x 4.6 mm, 5µ. Mobile phase containing Buffer and Acetonitrile taken in the ratio 55:45 was pumped through column at a flow rate of 1.2 ml/min. Buffer used in this method was 0.1% OPA solution. Temperature was maintained at 30°C. Optimized wavelength for Escitalopram and L-methylfolate was 230nm. Retention time of Escitalopram and L-methylfolate were found to be 2.753min and 3.357min. %RSD of the Escitalopram and L-methylfolate were and found to be 0.5 and 0.6 respectively. % Assay was obtained as 100.5% and 100.63% for Escitalopram and L-methylfolate respectively. LOD and LOQ values which were obtained from regression equations of Escitalopram and L-methylfolate, were 0.10ppm, 0.31ppm and 0.01ppm, 0.03ppm respectively. Regression equations for Escitalopram and L-methylfolate were found to be y = 9921.1x +14819, and y = 10759x + 1923.1 respectively.

Key Words: Escitalopram, L-methylfolate, RP-HPLC

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

8. SUMMARY

Table 8.1 Summary Table

Parameters	Escitalopram	L-methylfolate
Calibration range (mcg / ml)	18.75-112.5 ppm	25-150ppm
Optimized wavelength	230nm	230nm
Retention time	2.753min	3.357min
Regression equation (y)	y = 9921.1x +14819	y = 10759x + 1923.1
Correlation coefficient(r^2)	0.999	0.999
Precision (% RSD)	0.5	0.6
Assay (% content)	100.5%	100.63%
Limit of Detection (mcg / ml)	0.10ppm	0.01ppm
Limit of Quantization (mcg / ml)	0.31ppm	0.03ppm

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

9. CONCLUSION

A simple, Accurate, precise method was developed for the simultaneous estimation of the Escitalopram and L-methylfolate in Tablet dosage form. Our method was developed with less retention time for estimation of Escitalopram and L-methylfolate, so it may consume less mobile phase with short running time. 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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

PHARMACEUTICAL ANALYSIS PRACTICALS - I

(MPA 205P)

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

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

METHOD DEVELOPMENT AND VALIDATION OF LOPINAVIR AND RITONAVIR IN TABLET DOSAGE FORM USING RP-HPLC

Is a Dissertation Submitted to the

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutical Analysis and Quality Assurance

By

MATTA SRISRINIVASU

(Regd. No. 143G1S0403)

Under The Guidance

Institutional guide

Y.Surendranath Reddy, M.Pharm,(PH.D)

Associate Professor

Industrial guide

Mr.Dr.M.BALACANDU

Therdose Pharma private limited

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Department of Pharmaceutical Analysis & Quality Assurance,

Aditya Pharmacy College

Surampalem – 533 437

2014- 2017

ADITYA PHARMACY COLLEGE
(Approved by AICTE and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437,Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "METHOD DEVELOPMENT AND VALIDATION OF LOPINAVIR AND RITONAVIR IN TABLET DOSAGE FORM USING RP-HPLC is submitted to the Jawaharlal Nehru Technological University, Kakinada in partial fulfillment for the award of the degree of Master of Pharmacy in Pharmaceutical Analysis and Quality Assurance.This is a bonafied work carried out by M.SRISRINIVASU (Regd No:143G1S0403)under the guidance of supervision of Y.SURENDRANATH REDDY, Associate Professor, Aditya Pharmacy College, Surampalem.

Date: 19.1.17 SIGNATURE OF EVALUATOR 1

Place:surampalam

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SIGNATURE OF EVALUATOR2

DECLARATION

I, M.SRISRINIVASU,(Regd No:143G1S0403), do hereby declare that the dissertation entitled "METHOD DEVELOPMENT AND VALIDATION OF LOPINAVIR AND RITONAVIR IN TABLET DOSAGE FORM USING RP-HPLC"is a record of genuine research work carried out by me under the supervision of Y.SURENDRANATH REDDY, 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.

DATE :

PLACE: Surampalem

(M.SRISRINIVASU)

Regd. No. 143G1S0403

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY

he selected drugs RTV & LPV were estimated simultaneously by external standard method. he simultaneous method was optimized in the mobile phase ratio CH3OH : Water (85:15 v/v) ith 1 ml/min flow rate. The detection was carried out at wavelength 225 nm with a total run me of 10 min. The retention time and peak asymmetry of RTV & LPV were found to be 4.8 & 9 and of 1.04 & 1.05

he method was validated for all validation parameters as per ICH guidelines. The linearity nges for RTV& LPV were 5– 50 µg/ml & 20– 200 µg/ml and with R2 values of 0.999 & 998. The % RSD for method and system precision was < 2%. The method has been validated assay of tablet dosage forms. The accuracy of the method was validated by recovery studies d was found to significant and under specification limits, with % Recovery 98.2 – 102.94 % r RTV and 98.2 – 101.8 % for LPV. The assay results of RTV & LPV were found to be 99.5 % 98.5 %. The LOD and LOQ for RTV & LPV were 1.7µg & 27.6 µg and 5 & 83 µg. The ethod was also passes the specifications for robustness parameters.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

w RP-HPLC been developed for simultaneous estimation of Ritonavir and Lopinavir in tablet mulation. It was shown that the method lineare, accurate , precise, reproducible, economical, ective and specific providing the reliability of the method.

produces symmetric peak shapes, good resolution, and reasonable retension times for both the igs.

e method was fully validated and showing satisfactory data for all the method validation ameters tested.

ie recoveries achieved are good by the method.

ence, this method can be applicable for the simultaneous estimation of Ritonavir and pinavir in quality control studies for routine analysis

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

PHARMACEUTICS PRACTICALS - II

(MPH 205P)

1. To study the effect of temperature change , non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline^{R} software
11. In vitro cell studies for permeability and metabolism
12. DoE Using Design Expert® Software
13. Formulation data analysis Using Design Expert® Software
14. Quality-by-Design in Pharmaceutical Development
15. Computer Simulations in Pharmacokinetics and Pharmacodynamics
16. Computational Modeling Of Drug Disposition
17. To develop Clinical Data Collection manual
18. To carry out Sensitivity Analysis, and Population Modeling.
19. Development and evaluation of Creams
20. Development and evaluation of Shampoo and Toothpaste base
21. To incorporate herbal and chemical actives to develop products
22. To address Dry skin, acne, blemish, Wrinkles, bleeding gums and dandruff

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

"FORMULATION AND EVALUATION OF SIMVASTATIN FLOATING MICROSPHERES"

Is a Dissertation Submitted to the JNT University in partial fulfillment of the requirements for the degree of Masters in Pharmacy.

(2017)

JNT University, Kakinada A.P..

Master of Pharmacy

In

Pharmaceutics

Submitted By

ALLADI.DEVI SRI MAHA LAKSHMI

(Regd. No. 153G1S0301)

Institutional guide

Ms V.Parimala, M. Pharm.

Asst. Professor in pharmaceutics

Industrial guide

Bala Venkata Reddy.M. M. Pharm

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Department of Pharmaceutics, Aditya Pharmacy College

Surampalem – 533 437

2015- 2017

ADITYA PHARMACY COLLEGE

ADITYA PHARMACY COLLEGE
(Approved by AICTE and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION AND EVALUATION OF SIMVASTATIN FLOATING MICROSPHERES" 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 V.DEVI SRI MAHA LAKSHMI (Regd No:153G1S0301) under the guidance of supervision of Ms. V.Parimala , Assistant Professor, Aditya Pharmacy College, Surampalem.

Date: 16/9/17

Place Surampalem

16/9/17
SIGNATURE OF EVALUATOR 1

V. Parimala
SIGNATURE OF EVALUATOR 2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM - 533437

DECLARATION

I, A. DEVI SRI MAHA LAKSHMI (Regd No:153G1S0301), do hereby declare that the dissertation entitled "FORMULATION AND EVALUATION OF SIMVASTATIN FLOATING MICROSPHERES " is a record of genuine research work carried out by me under the supervision of Ms.V.Parimala, Assistant Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place: Surampalem

Date: 16/9/17

Regd. No. 153G1S0301

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

9. SUMMARY AND CONCLUSION

In the present work,floating microspheres of Simvastatin using Eudragit RS100, Ethylcellulose, HPMC K4M and Sodium alginate as copolymers were formulated to deliver Simvastatin via oral route.

- FT-IR spectra of the physical mixture revealed that the drug is compatible with the polymers and copolymers used.
- Micromeritic studies revealed that the mean particle size of the prepared microspheres was in the size range of 512-903µm and are suitable for bioadhesive microspheres for oral administration.
- Increase in the polymer concentration led to increase in % Yield, % Drug entrapment efficiency, Particle size, % swelling and % Mucoadhesion.
- The *invitro* drug release decreased with increase in the polymer concentration.
- Analysis of drug release mechanism showed that the drug release from the formulations followed non-Fickian diffusion and the best fit model was found to be Korsmeyer-Peppas.
- Based on the results of evaluation tests formulation coded F4 was concluded as best formulation.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS)
(MPH 201T)

Scope

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

Objectives

Upon completion of the course student shall be able to understand

- The various approaches for development of novel drug delivery systems.
- The criteria for selection of drugs and polymers for the development of NTDS
- The formulation and evaluation of novel drug delivery systems.

THEORY 60 Hrs

1.	Targeted Drug Delivery Systems: Concepts, Events and biological process involved in drug targeting. Tumor targeting and Brain specific delivery.	12 Hrs
2	Targeting Methods: introduction preparation and evaluation. Nano Particles & Liposomes: Types, preparation and evaluation.	12 Hrs
3	Micro Capsules / Micro Spheres: Types, preparation and evaluation , Monoclonal Antibodies ; preparation and application, preparation and application of Niosomes, Aquasomes, Phytosomes, Electrosomes.	12 Hrs
4	Pulmonary Drug Delivery Systems : Aerosols, propellents, ContainersTypes, preparation and evaluation, Intra Nasal Route Delivery systems; Types, preparation and evaluation.	12 Hrs
5	Nucleic acid based therapeutic delivery system : Gene therapy, introduction (ex-vivo & in-vivo gene therapy). Potential target diseases for gene therapy (inherited disorder and cancer). Gene expression systems (viral and nonviral gene transfer). Liposomal gene delivery systems. Biodistribution and Pharmacokinetics. knowledge of therapeutic antisense molecules and aptamers as drugs of future.	12 Hrs

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,Marcel Dekker, Inc., New York, 1992.
2. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, VallabhPrakashan, New Delhi, First edition 2002.
3. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).

FORMULATION DEVELOPMENT AND IN-VITRO EVALUATION OF FAST DISSOLVING ORAL FILMS OF MEMANTINE HYDROCHLORIDE EMPLOYING DIFFERENT GRADES OF HYDROXYPROPYL METHYL CELLULOSE

Is a dissertation submitted to

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutics

By

KAMMA KEERTHI SAI

(Regd. No. 153G1S0302)

Institutional guide

Ms V.Parimala, M. Pharm.

Assistant Professor

Industrial guide

Mr M .Venkatareddy, M. pharm

PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM 533 437

Department of Pharmaceutics

Aditya Pharmacy College

Surampalem – 533 437

2015- 2017

ADITYA PHARMACY COLLEGE

(Approved by AICTE and affiliated to JNT University, Kakinada)

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

Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION DEVELOPMENT AND IN-VITRO EVALUATION OF FAST DISSOLVING ORAL FILMS OF MEMANTINE HYDROCHLORIDE EMPLOYING DIFFERENT GRADES OF HYDROXYPROPYL METHYL CELLULOSE" 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 Kamma keerthi sai (Regd No:153G1S0302) under the guidance and supervision of Ms. V.Parimala Assistant Professor, Aditya Pharmacy College, Surampalem and under the guidance of Mr.M.Venkatareddy,pharma train laboratories,Hyderabad.

Date: 14/9/17

Place: Surampalem

P. Uma devi

SIGNATURE OF EVALUATOR 1

PRINCIPAL
Aditya Pharmacy Co
SURAMPALEM-533

V. Parimala

SIGNATURE OF EVALUATOR 2

DECLARATION

I, **Kamma Keerthi sai (Regd No:153G1S0302)**, do hereby declare that the issertation entitled **"FORMULATION DEVELOPMENT AND IN-VITRO EVALUATION OF FAST DISSOLVING ORAL FILMS OF MEMANTINE HYDROCHLORIDE EMPLOYING DIFFERENT GRADES OF HYDROXYPROPYL METHYL CELLULOSE "** is a record of genuine research work carried out by me under he supervision of **Ms.V.Parimala**, Assistant 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 refereneed or acknowledged.

K. Keerthi Sai

Place :

(K. keerthi sai)

Date:

Regd no : 153G1S0302

ADITYA PHARMACY COLLEGE SURAMPALEM - 533 437

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

10. SUMMARY AND CONCLUSION

Summary:

Recently, fast dissolving drug delivery system have started gaining popularity and acceptance as new drug delivery systems, because they are easy to administer and lead to better compliance. Fast-dissolving oral delivery systems are solid dosage forms, which disintegrate or dissolve within 1 min when placed in the mouth without drinking or chewing. Memantine is suitable drug candidate to formulate in to fast dissolving films. HPMC E5, HPMC E3 and HPMC E15 were selected as polymers, sorbitol and propylene glycol as plasticizers, aspartame as sweetener, and pippermint as a flavor was included, and formulation was developed based on the plasticizer and polymer concentration. Thus prepared films are evaluated for thickness, weight variation, assay, surface P^H, folding endurance, disintegration time, invitro dissolution, release order kinetics (zero order and first order) were applied for optimized formulation F4 and F8.

Conclusion:

- Memantine orally disintegrating films were successfully prepared with HPMC E5, HPMC E3 and HPMC E15.
- The amount of plasticizer propylene glycol was critical for film formation and separation properties.
- Taste masking was achieved using combination of sweetener aspartame and pippermint flavor.
- Propylene glycol was selected for solubility enhancer during shelf life period.
- Type of flavouring agent was critical for producing taste masking of mouth dissolving film.
- Acceptable properties were obtained in the batch F-4 and F-8 and the in -vitro disintegaration time was below 20 seconds.
- It was concluded that formulations F-4 and F 8were found to be satisfactory batches and were optimized for the desirable properties.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

COMPUTER AIDED DRUG DEVELOPMENT
(MPH 203T)

Scope

This course is designed to impart knowledge and skills necessary for computer Applications in pharmaceutical research and development who want to understand the application of computers across the entire drug research and development process. Basic theoretical discussions of the principles of more integrated and coherent use of computerized information (informatics) in the drug development process are provided to help the students to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able to understand,

- History of Computers in Pharmaceutical Research and Development
- Computational Modeling of Drug Disposition
- Computers in Preclinical Development
- Optimization Techniques in Pharmaceutical Formulation
- Computers in Market Analysis
- Computers in Clinical Development
- Artificial Intelligence (AI) and Robotics
- Computational fluid dynamics(CFD)

THEORY 60 Hrs

1.	a. Computers in Pharmaceutical Research and Development: A General Overview: History of Computers in Pharmaceutical Research and Development. Statistical modeling in Pharmaceutical research and development: Descriptive versus Mechanistic Modeling, Statistical Parameters, Estimation, Confidence Regions, Nonlinearity at the Optimum, Sensitivity Analysis, Optimal Design, Population Modeling b. Quality-by-Design In Pharmaceutical Development: Introduction, ICH Q8 guideline, Regulatory and industry views on QbD, Scientifically based QbD - examples of application.	12 Hrs
2	Computational Modeling Of Drug Disposition: Introduction ,Modeling Techniques: Drug Absorption, Solubility, Intestinal Permeation, Drug Distribution ,Drug Excretion, Active Transport: P-gp, BCRP, Nucleoside Transporters, hPEPT1, ASBT, OCT, OATP, BBB-Choline Transporter.	12 Hrs

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

3	Computer-aided formulation development:: Concept of optimization, Optimization parameters, Factorial design, Optimization technology & Screening design. Computers in Pharmaceutical Formulation: Development of pharmaceutical emulsions, microemulsion drug carriers Legal Protection of Innovative Uses of Computers in R&D, The Ethics of Computing in Pharmaceutical Research, Computers in Market analysis	12 Hrs
4	a. Computer-aided biopharmaceutical characterization: Gastrointestinal absorption simulation. Introduction, Theoretical background, Model construction, Parameter sensitivity analysis, Virtual trial, Fed vs. fasted state, In vitro dissolution and in vitro-in vivo correlation, Biowaiver considerations b. Computer Simulations in Pharmacokinetics and Pharmacodynamics: Introduction, Computer Simulation: Whole Organism, Isolated Tissues, Organs, Cell, Proteins and Genes. c. Computers in Clinical Development: Clinical Data Collection and Management, Regulation of Computer Systems	12 Hrs
5	Artificial Intelligence (AI), Robotics and Computational fluid dynamics: General overview, Pharmaceutical Automation, Pharmaceutical applications, Advantages and Disadvantages. Current Challenges and Future Directions.	12 Hrs

REFERENCES

1. Computer Applications in Pharmaceutical Research and Development, Sean Ekins, 2006, John Wiley & Sons.
2. Computer-Aided Applications in Pharmaceutical Technology, 1st Edition, Jelena Djuris, Woodhead Publishing
3. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James. G.Boylan, Marcel Dekker Inc, New York, 1996.

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF GASTRORETENTIVE MUCOADHESIVE TABLETS OF ANTIRETROVIRAL DRUG

A Dissertation submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY,
KAKINADA-533003.

In partial fulfillment of the requirement for the degree of

MASTER OF PHARMACY

IN

PHARMACEUTICS

Submitted by

MOHAMMAD BAKHATWAR

(153G1S0303)

Under the Esteemed Guidance of

CH.SIVA RAMESH M. Pharm

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

ADITYA PHARMACY COLLEGE

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

AFFILIATED TO JNTUK, APPROVED BY AICTE & PCI

This is to certify that the investigation described in this thesis entitled *"FORMULATION AND EVALUATION OF GASTRORETENTIVE MUCOADHESIVE TABLETS OF ANTIRETROVIRAL DRUG"* was submitted by *MOHAMMAD BAKHATWAR(153G1S0303)*of Aditya Pharmacy college(Affiliated to JNTU Kakinada) for the partial fulfillment of Degree of Master of Pharmacy. The Report embedded in this thesis was carried out under the Guidance of Mr.Ch.Siva Ramesh,M.Pharm Asst. Professor Aditya Pharmacy college, Surampalem.

Ch. Siva Ramesh

Ch.Siva Ramesh, M.Pharm

ADITYA PHARMACY COLLEGE

SURAMPALEM-533437

P. Umadevi

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

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

AFFILIATED TO JNTUK, APPROVED BY AICTE & PCI

DECLARATION

The research work embodied in this thesis *"FORMULATION AND EVALUATION OF GASTRORETENTIVE MUCOADHESIVE TABLETS OF ANTIRETROVIRAL DRUG"* was carried out by us in the Pharmaceutics laboratory, under the guidance of Mr.Ch.Siva Ramesh,M.Pharm. The extent and sources 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 part or full for any Diploma or Degree of this or any other University.

Md. Bakhatwar

MOHAMMAD BAKHATWAR

(153G1S0303)

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY AND CONCLUSION

SUMMARY

GRDDS offer a simple and practical approach to achieve increased gastric residence and to modify drug release profiles essential for sustained, site specific and localized drug action.

Mucoadhesive tablets, in general, have the potential to be used for controlled release drug delivery, but coupling of mucoadhesive properties to tablet has additional advantages, e.g. efficient absorption and enhanced bioavailability of the drugs due to a high surface to volume ratio, a much more intimate contact with the mucus layer.

Zidovudine, a structural analog of thymidine, is a prodrug that must be phosphorylated to its active 5'-triphosphate metabolite, zidovudine triphosphate (ZDV-TP). It inhibits the activity of HIV-1 reverse transcriptase (RT) via DNA chain termination after incorporation of the nucleotide analogue. It competes with the natural substrate dGTP and incorporates itself into viral DNA. It is also a weak inhibitor of cellular DNA polymerase α and γ.

It rapid and nearly complete absorption from the gastrointestinal tract following oral administration; The biological half-life of Zidovudine is 0.5-3 hours. Zidovudine has very low plasma protein binding which is about 30-38%. It is rapid and nearly complete absorption from the gastrointestinal tract expected that "mucoadhesive delivery system" will bring the drug in the vicinity of absorption window and the rate and extent of Zidovudine will be expected to be increased. It is also expected that the increased plasma concentration (rate and extent) will be in the therapeutic window. This will reduce the dose of Zidovudine and treatment will be cost effective. In the present work, attempts are made in order to increase the rate and extent of absorption of Zidovudine by formulating it in a mucoadhesive delivery system. Reduced dose of the drug will decrease the development of the resistance and toxicity to Zidovudine.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

- The literature review discussed the previous research done on gastro retentive drug delivery systems, mucoadhesive matrix tablets of various drugs including Zidovudine. It is note worthy that mucoadhesion as a strategy for gastro retention for Zidovudine has not been explored till now with this polymer combination.
- The gastro retentive mucoadhesive tablets of Zidovudine using different mucoadhesive polymers like HPMC K100M, NaCMC, Carbopol 934P and PVP K30 in order to prolong the drug release, and to impart mucoadhesive properties to the controlled release tablet formulations.
- All the prepared tablets were found to be good without chipping, capping and sticking.
- The drug content was uniform and well within the accepted limits with low values of standard deviation indicating uniform distribution of drug within the tablets.
- FT-IR spectroscopic studies indicated that the drug is compatible with polymer and co-excipients.
- The prepared gastro retentive mucoadhesive tablets of Zidovudine showed excellent *in vitro* mucoadhesion properties. The strength of adhesion is found to dependant on the viscosity grade and the concentration of polymer used.
- The *in vitro* dissolution profiles of the prepared formulations of Zidovudine were found to extend the drug release over a period of 8-12 hours and the drug release was found to decrease with an increase in concentration of polymer.
- The prepared formulations were found to have a good swelling property, with HPMC K100 containing formulations showing maximum water uptake.
- Release of Zidovudine from the developed formulations was found to follow zero order kinetics (r^2= 0.967 to 0.997) and correlation coefficient $r > 0.9$ indicated good fit of Higuchi model suggesting that diffusion is the predominant mechanism controlling the drug release. When drug release data fitted to Korsmeyer equation, the values of slope 'n' (0.565 to 0.907) indicated that the drug release was by non-Fickian mechanism.
- Among the various gastro retentive mucoadhesive formulations studied, formulation F13 containing HPMC K100M and NaCMC showed promising results releasing 99.98% of the drug in 12 hours with a mucoadhesive strength of 25.14 g has been considered as an ideal formulation.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

- On studying all the experimental results of the prepared formulations, it can be concluded that gastro retentive mucoadhesive tablets of Zidovudine can be successfully prepared using polymers like HPMC K100M, NaCMC, Carbopol 934P and PVP K30.
- The concentration and viscosity of polymer were found to influence the swelling behaviour and mucoadhesive strength.
- It was observed that release of Zidovudine from different formulations was spread over a period of 8-12hrs depending on the concentration and viscosity of polymer used. The order of retardation of drug release from different polymers is: HPMCK100M> NaCMC> Carbopol 934P.
- The *in vitro* dissolution profiles are extended over a period of 12hrs and the release of the drug from the formulations was found to follow zero order kinetics and the mechanism was found to be non- Fickian diffusion.
- Among various formulations studied, F13 containing HPMC K100M and NaCMC showed 99.98% drug release at the end of 12 hrs was selected as the best formulation due to its good retardation and mucoadhesive strength.
- It may be concluded that F13 seems to be the promising formulation, providing controlled delivery, for improved bioavailability of drugs such as Zidovudine.

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

COSMETICS AND COSMECEUTICALS
(MPH 204T)

Scope

This course is designed to impart knowledge and skills necessary forthefundamental need for cosmetic and cosmeceutical products.

Objectives

Upon completion of the course, the students shall be able to understand

- Key ingredients used in cosmetics and cosmeceuticals.
- Key building blocks for various formulations.
- Current technologies in the market
- Various key ingredients and basic science to develop cosmetics and cosmeceuticals
- Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.

THEORY 60 Hrs

1.	Cosmetics – Regulatory : Definition of cosmetic products as per Indian regulation. Indian regulatory requirements for labeling of cosmetics Regulatory provisions relating to import of cosmetics., Misbranded and spurious cosmetics. Regulatory provisions relating to manufacture of cosmetics - Conditions for obtaining license, prohibition of manufacture and sale of certain cosmetics, loan license, offences and penalties.	12 Hrs
2	Cosmetics - Biological aspects : Structure of skin relating to problems like dry skin, acne, pigmentation, prickly heat, wrinkles and body odor. Structure of hair and hair growth cycle. Common problems associated with oral cavity. Cleansing and care needs for face, eye lids, lips, hands, feet, nail, scalp, neck, body and under-arm.	12 Hrs
3	Formulation Building blocks: Building blocks for different product formulations of cosmetics/cosmeceuticals. Surfactants – Classification and application. Emollients, rheological additives: classification and application. Antimicrobial used as preservatives, their merits and demerits. Factors affecting microbial preservative efficacy. Building blocks for formulation of a moisturizing cream, vanishing cream, cold cream, shampoo and toothpaste. Soaps and syndetbars. Perfumes; Classification of perfumes. Perfume ingredients listed as allergens in EU regulation.	12 Hrs

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

	Controversial ingredients: Parabens, formaldehyde liberators, dioxane.	
4	Design of cosmeceutical products: Sun protection, sunscreens classification and regulatory aspects. Addressing dry skin, acne, sun-protection, pigmentation, prickly heat, wrinkles, body odor., dandruff, dental cavities, bleeding gums, mouth odor and sensitive teeth through cosmeceutical formulations.	12 Hrs
5	Herbal Cosmetics : Herbal ingredients used in Hair care, skin care and oral care. Review of guidelines for herbal cosmetics by private bodies like cosmos with respect to preservatives, emollients, foaming agents, emulsifiers and rheology modifiers. Challenges in formulating herbal cosmetics.	12 Hrs

REFERENCES

1. Harry's Cosmeticology. 8th edition.
2. Poucher'sperfumecosmeticsandSoaps,10th edition.
3. Cosmetics - Formulation, Manufacture and quality control, PP.Sharma,4th edition
4. Handbook of cosmetic science and Technology A.O.Barel, M.Paye and H.I. Maibach. 3rd edition
5. Cosmetic and Toiletries recent suppliers catalogue.
6. CTFA directory.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF ORAL *IN-SITU* GELS OF ZIPRASIDONE

Is a Dissertation Submitted to

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutics

By

NOKKU ANUSHA

(Regd. No. 153G1S0304)

Institutional guide

G. SRIDEVI M. Pharm.

Assistant Professor

Industrial guide

Mr M .Venkatareddy, M. pharm

Department of Pharmaceutics,

Aditya Pharmacy College

Surampalem – 533 437

2015- 2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE
(Approved by AICTE and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION AND EVALUATION OF ORAL *IN-SITU* GELS OF ZIPRASIDONE" 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 Nokku Anusha (Regd No:153G1S0304) under the guidance and supervision of Ms. G.Sri Devi Assistant Professor, Aditya Pharmacy College, Surampalem and under the guidance of Mr.M.Venkatareddy,pharma train laboratories.

SIGNATURE OF EVALUATOR 1

Date:

Place

SIGNATURE OF EVALUATOR 2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

I, **Nokku Anusha** (Regd No:153G1S0304), do hereby declare that the dissertation entitled "**FORMULATION AND EVALUATION OF ORAL *IN-SITU* GELS OF ZIPRASIDONE** " is a record of genuine research work carried out by me under the supervision of Ms.G.Sri Devi, Assistant Professor, Aditya Pharmacy College, Surampalem. The work reported herein has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

Place : Surampalem

Date: 16.09.17

(N.Anusha)

Regd no : 153G1S0304

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY&CONCLUSION

- It can be concluded from the present investigation that proper selection of polymers and drug is a pre requisite for designing and developing a oral *in-situ* gel. The UV studies suggest that polymer selected i.e Sodium alginate and HPMC were found to be compatible with the drug Ziprasidone. The varying concentrations of the two polymers were found to affect the gel parameters like drug release, spreadability and its viscosity.
- Gel formulations showed good homogeneity, good stability.
- However, the gel proved to be the formula of choice, since it showed the highest percentage of drug release and good rheological properties.
- FTIR spectra reveal the absence of interaction between drug and excipients used.
- Ziprasidone oral in-situ gels were successfully prepared with HPMC, Sodium alginate,ethyl cellulose.
- The data has been fitted into zero order first order higuchi and peppas to find out best fit model.
- The % drug content of all formulations was varied from 90.07% to 97.01%, the drug content was found to be the highest for F5 formulation.
- The standard calibration curve of Ziprasidone in 0.1N HCL showed good correlation with regression value of 0.999.
- Formulation F5 provides better and more rapid improvement in patients.
- Studies conducted so far reveals a promising results, there exists a scope for further pharmacokinetic studies.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

- The conclusions arrived in this thesis indicated that the Formulation F5 of Ziprasidone oral *in-situ* gels in this investigation was found to be satisfactory based on *in vitro* release studies.
- The bioavailability of the drug can also be improved with these sustained drug delivery systems which increase efficacy, compliance and better clinical usefulness of patients.

ADITYA PHARMACY COLLEGE * SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF GLIPIZIDE

Is a Dissertation Submitted to

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutics

By

R. PRATHYUSHA

(Regd. No. 153G1S0305)

Institutional guide

S. Madhavi Latha,M.Pharm.

Assistant Professor

Industrial guide

Mr M .Venkatareddy, M. pharm

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Department of Pharmaceutics,
Aditya Pharmacy College
Surampalem – 533 437

2015- 2017

ADITYA PHARMACY COLLEGE

(Approved by AICTE and affiliated to JNT University, Kakinada)

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

Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled **"FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF GLIPIZIDE"** 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 R. Prathyusha (Regd No:153G1S0305) under the guidance and supervision of S. Madhavi Latha Assistant Professor, Aditya Pharmacy College, Surampalem and under the guidance of Mr.M.Venkatareddy,pharma train laboratories.

SIGNATURE OF EVALUATOR 1

Date: 16-09-2017

Place Surampallem

SIGNATURE OF EVALUATOR2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

I, R. Prathyusha (Regd No:153G1S0305), do hereby declare that the dissertation entitled **"FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF GLIPIZIDE"**is a record of genuine research work carried out by me under the supervision of S. Madhavi Latha, Assistant 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.

R.prathyusha

(R. Prathyusha)

Regd no : 153G1S0305

Place : 16-09-2017

Date: Surampellem

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY AND CONCLUSION

The Conclusions drawn from the present investigation are given below

- Suitable analytical methods based on UV-Vis spectrophotometry were developed for Glipizide.
- The transdermal patches of Glipizide was prepared successfully using polymers such as HPMC K15M and HPMC K100M and HPMC K 200M
- The amount of plasticizer tween 80 was critical for patch formation and separation properties.
- Tween 80 was selected for solubility enhancer and plasticizer during shelf life period.
- Based on the observations, the patches exhibited satisfactory characteristics regarding to thickness,weight variation, Drug content, foldingendurance, Tensile strength,Invitro drug release.
- The thickness and weight variation were found to be uniform.
- The folding endurance was optimum and exhibited good physical and mechanical properties.
- The pharmacokinetic models like First order plot Higuchi's plot, Peppa's plot showed best fit lines. F_5 formulation showed R^2 value of 0.971 and 0.984 for Higuchi's and Peppa's plots respectively.
- Accelerated stability studies were performed for the best formulation F_5. Even after 3 months it has retained all its physical properties and drug release patterns.
- It was concluded that formulations F-5 was found to be satisfactory patches and was optimized for the desirable properties.

PRINCIPAL
Aditya Pharmacy College

ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS
(MPH 202T)

Scope

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able understand,

- The basic concepts in biopharmaceutics and pharmacokinetics.
- The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- The critical evaluation of biopharmaceutic studies involving drug product equivalency.
- The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
- The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic

THEORY — 60 Hrs

1. Drug Absorption from the Gastrointestinal Tract: 12 Hrs

   Gastrointestinal tract, Mechanism of drug absorption, Factors affecting drug absorption, pH–partition theory of drug absorption. Formuulation and physicochemical factors: Dissolution rate, Dissolution process, Noyes–Whitney equation and drug dissolution, Factors affecting the dissolution rate. Gastrointestinal absorption: role of the dosage form: Solution (elixir, syrup and solution) as a dosage form ,Suspension as a dosage form, Capsule as a dosage form, Tablet as a dosage form ,Dissolution methods ,Formulation and processing factors, Correlation of in vivo data with in vitro dissolution data.Transport model: Permeability-Solubility-Charge State and the pH Partition Hypothesis, Properties of the Gastrointestinal Tract (GIT), pH Microclimate Intracellular pH Environment, Tight-Junction Complex.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

2	Biopharmaceutic considerations in drug product design and In Vitro Drug Product Performance: Introduction, biopharmaceutic factors affecting drug bioavailability, rate-limiting steps in drug absorption, physicochemical nature of the drug formulation factors affecting drug product performance, in vitro: dissolution and drug release testing, compendial methods of dissolution, alternative methods of dissolution testing,meeting dissolution requirements,problems of variable control in dissolution testingperformance of drug products. In vitro–in vivo correlation, dissolution profile comparisons, drug product stability,considerations in the design of a drug product.	12 Hrs
3	Pharmacokinetics: Basic considerations, pharmacokinetic models, compartment modeling: one compartment model- IV bolus, IV infusion, extra-vascular. Multi compartment model:two compartment - model in brief, non-linear pharmacokinetics: cause of non-linearity, Michaelis – Menten equation, estimation of k_{max} and v_{max}. Drug interactions: introduction, the effect of protein-binding interactions,the effect of tissue-binding interactions,cytochrome p450-based drug interactions,drug interactions linked to transporters.	12 Hrs
4	Drug Product Performance, In Vivo: Bioavailability and Bioequivalence: drug product performance, purpose of bioavailability studies, relative and absolute availability. methods for assessing bioavailability, bioequivalence studies, design and evaluation of bioequivalence studies, study designs, crossover study designs, evaluation of the data, bioequivalence example, study submission and drug review process. biopharmaceutics classification system, methods. Permeability: In-vitro, in-situ and In-vivo methods.generic biologics (biosimilar drug products),clinical significance of bioequivalence studies, special concerns in bioavailability and bioequivalence studies, generic substitution.	12 Hrs
5	Application of Pharmacokinetics: Modified-Release Drug Products, Targeted Drug Delivery Systems and Biotechnological Products. Introduction to Pharmacokinetics and pharmacodynamic, drug interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs. Introduction, Proteins and peptides, Monoclonal antibodies, Oligonucleotides, Vaccines (immunotherapy), Gene therapies.	12 Hrs

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF FAST DISSOLVING FILMS OF RISPERIDONE

Is a Dissertation Submitted to

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutics

By

SIDDA.SWATHI LAKSHMI

(Regd. No. 153G1S0306)

Institutional guide

Mrs.S.Madhavi Latha,M.Pharm.

Assistant Professor

Industrial guide

Mr M .Venkatareddy, M. pharm

Department of Pharmaceutics,
Aditya Pharmacy College
Surampalem – 533 437

2015- 2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE

(Approved by AICTE and affiliated to JNT University, Kakinada)

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

Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION AND EVALUATION OF FAST DISSOLVING FILIMS OF RISPERIDONE" 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 SIDDA SWATHI LAKSHMI (Regd No:153G1S0306) under the guidance and supervision of S.Madhavi Latha, Assistant Professor, Aditya Pharmacy College, Surampalem and under the guidance of Mr.M.Venkatareddy,pharma train laboratories.

Date: 13/09/17

Place Surampalem

SIGNATURE OF EVALUATOR 1

S. Madhavi Latha

SIGNATURE OF EVALUATOR2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

I, Sidda Swathi Lakshmi (Regd No:153G1S0306), do hereby declare that the dissertation entitled "FORMULATION AND EVALUATION OF FAST DISSOLVING FILIMS OF RISPERIDONE"is a record of genuine research work carried out by me under the supervision of S.Madhavi Latha, Assistant 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.

S.Swathi lakshmi

(SIDDA SWATHI LAKSHMI)

Regd no : 153G1S0306

Place : 13/09/17

Date: Surampalem

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

he Conclusions drawn from the present investigation are given below:

1. Suitable analytical methods based on UV-Vis spectro-photometry were developed for Risperidone.
2. Risperidone orally disintegrating films were successfully prepared with HPMC E15CPS and HPMC E15 & HPMC E5 combination.
3. Based on observations, the films exhibited satisfactory characteristics regarding to integrity, flexibility, dispersion of drug, and other quality control parameters. The surface texture of films was smooth and uniform.
4. The thicknesses of the films were in the range of 0.234 mm to 0.271mm.
5. The weights of the films were found to be in the range of ±10%.
6. Folding endurance of the films was found to be in the range of 38± 1 to 57 ± 2.
7. The surface pH of all the films was found to be neutral as there was no colour change in the litmus paper.
8. The drug content uniformity is performed by taking three films in each formulation trial and the average drug content was calculated. And all the films were found to be 98 to 102.
9. The disintegration time of the prepared films were in the range of 21sec to 32sec.
10. Acceptable mechanical properties were obtained in the batch F-9 and the in - vitro disintegration time was below of 27 sec.
11. It was concluded that formulations F-9 were found to be satisfactory batch and were optimized for the desirable properties.

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM 533 43

DRUG DELIVERY SYSTEMS
(MPH 102T)

SCOPE

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

OBJECTIVES

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

The various approaches for development of novel drug delivery systems.

The criteria for selection of drugs and polymers for the development of delivering system

The formulation and evaluation of Novel drug delivery systems..

THEORY — 60 Hrs

1.	Sustained Release(SR) and Controlled Release (CR) formulations: Introduction & basic concepts, advantages/ disadvantages, factors influencing, Physicochemical & biological approaches for SR/CR formulation, Mechanism of Drug Delivery from SR/CR formulation. Polymers: introduction, definition, classification, properties and application Dosage Forms for Personalized Medicine: Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines: Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.	10 Hrs
2	Rate Controlled Drug Delivery Systems: Principles & Fundamentals, Types, Activation: Modulated Drug Delivery Systems;Mechanically activated, pH activated, Enzyme activated, and Osmotic activated Drug Delivery Systems Feedback regulated Drug Delivery Systems; Principles & Fundamentals.	10 Hrs
3	Gastro-Retentive Drug Delivery Systems: Principle, concepts advantages and disadvantages, Modulation of GI transit time approaches to extend GI transit. Buccal Drug Delivery Systems: Principle of muco adhesion, advantages and disadvantages, Mechanism of drug permeation, Methods of formulation and its evaluations.	10 Hrs
4	Occular Drug Delivery Systems: Barriers of drug permeation, Methods to overcome barriers.	06 Hrs

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

5	Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation.	10 Hrs
6	Protein and Peptide Delivery: Barriers for protein delivery. Formulation and Evaluation of delivery systems of proteins and other macromolecules.	08 Hrs
7	Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccines.	06 Hrs

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,
   Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker,Inc., New York, 1992.
3. Encyclopedia of controlled delivery, Editor- Edith Mathiowitz, Published by WileyInterscience Publication, John Wiley and Sons, Inc, New York! Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002

JOURNALS

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian drugs (IDMA)
3. Journal of controlled release (Elsevier Sciences) desirable
4. Drug Development and Industrial Pharmacy (Marcel & Decker) desirable

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF NIFEDIPINE

Is a Dissertation Submitted to

JNT University, Kakinada

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

Master of Pharmacy

In

Pharmaceutics

By

VENNA.SREE SANTOSHI

(Regd. No. 153G1S0307)

Institutional guide

G.Sri Devi,M.Pharm.

Assistant Professor

Industrial guide

Mr M .Venkatareddy, M. pharm

Department of Pharmaceutics,

Aditya Pharmacy College

Surampalem – 533 437

2015- 2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE
(Approved by AICTE and affiliated to JNT University, Kakinada)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

EVALUATION CERTIFICATE

This is to certify that the dissertation work entitled "FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF NIFEDIPINE" 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 Venna.Sree Santoshi (Regd No:153G1S0307) under the guidance and supervision of G.SriDevi. Assistant Professor, Aditya Pharmacy College, Surampalem and under the guidance of Mr.M.Venkatareddy,pharma train laboratories.

Date: 13/9/17

Place Surampalem

SIGNATURE OF EVALUATOR 1

SIGNATURE OF EVALUATOR2

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

DECLARATION

I, Venna.Sree Santoshi (Regd No:153G1S0307), do hereby declare that the dissertation entitled "FORMULATION AND EVALUATION OF TRANSDERMAL DRUG DELIVERY SYSTEM OF NIFEDIPINE"is a record of genuine research work carried out by me under the supervision of G.Sri Devi, Assistant Professor, Aditya Pharmacy College, Surampalem. The work reported here in has not been previously submitted by other persons for qualifications at any other University or academic institutions unless otherwise referenced or acknowledged.

V.Sree Santoshi

Place : Surampalem

(Venna.Sree Santoshi)

Date: 13/9/13

Regd no : 153G1S0307

ADITYA PHARMACY COLLEGE

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

SUMMARY &CONCLUSION

From the experimental data, it can be concluded that

- FTIR spectra reveal the absence of interaction between Drug and Excipients used.
- The standard calibration curve of Nifedipine in 7.4 phosphate buffer showed good correlation with regression value of 0.999
- The folding endurance values of all formulations were found to be from 228-260 is within the acceptable criteria.
- The tensile strength values of all formulations were found to be from 2.85 - 3.85 is within the acceptable criteria.
- Nifedipine transdermal patches were successfully prepared with HPMC K15M, PEO and Ethyl cellulose.
- The data has been fitted into zero order first order higuchi and peppas to find out best fit model.
- From r^2 coefficient value it was found that all the formulations followed zero order kinetics. From release exponent value n of Korsemeyer's Peppas plot it is founded that the mechanism of drug release of all formulations follows non fickian diffusion (0.72-0.936) except F_9 (1.009) which follows super case ii transport.
- The amount of plasticizer tween 80 was critical for patch formation and separation properties.
- Tween 80 was selected for solubility enhancer and plasticizer during shelf life period.
- It was concluded that formulations F-3 was found to be satisfactory batch and was optimized for the desirable properties.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

- Selected formulation F3 was stored at 40°C ± 2°C / 75% ± 5% RH or a period of 3 months. Samples were analyzed after storage for 1, 2 and 3 month and evaluated and the obtained values was observed that within the acceptable criteria and satisfactory.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Second year

2.1 PATHOPHYSIOLOGY (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic Pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge of its application in other subject of pharmacy.

2. **Objectives of the Subject :** Upon completion of the subject student shall be able to –
   a. describe the etiology and pathogenesis of the selected disease states;
   b. name the signs and symptoms of the diseases; and
   c. mention the complications of the diseases.

   Text books (Theory)
   a. Pathologic basis of disease by- Cotran, Kumar, Robbins
   b. Text book of Pathology- Harsh Mohan
   c. Text book of Pathology- Y.M. Bhinde

   Reference books (Theory)
   a. Clinical Pharmacy and Therapeutics; Second edition; Roger Walker; Churchill Livingstone publication

3. **Detailed syllabus and lecture wise schedule :**

   Chapter

   1 **Basic principles of cell injury and Adaptation**
   a) Causes, Pathogenesis and morphology of cell injury
   b) Abnormalities in lipoproteinaemia, glycogen infiltration and glycogen infiltration and glycogen infiltration and glycogen storage diseases

   2 **Inflammation**
   a) Pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation
   b) Repairs of wounds in the skin, factors influencing healing of wounds

   3 **Diseases of Immunity**
   a) Introduction to Tand B cells
   b) MHC proteins or transplantation antigens
   c) Immune tolerance
   - Hypersensitivity
     Hypersensitivity type I, II, III, IV, Biological significance, Allergy due to food, chemicals and drugs
   - Autoimmunity
     Criteria for autoimmunity, Classifications of autoimmune diseases in man, mechanism of autoimmunity, Transplantation and immunologic tolerance, allograft rejections, transplantation antigens, mechanism of rejection of allograft.
   - Acquired immune deficiency syndrome (AIDS)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

- Amylodosis

4 **Cancer:** differences between benign and malignant tumors, Histological diagnosis of malignancy, invasions and metastasis, patterns of spread, disturbances of growth of cells, classification of tumors, general biology of tumors, spread of malignant tumors, etiology and pathogenesis of cancer.

5 Types of shock, mechanisms, stages and management

6 Biological effects of radiation

7 Environmental and nutritional diseases
   i) Air pollution and smoking- SO2,NO, NO2, and CO
   ii) Protein calorie malnutrition, vitamins, obesity, pathogenesis of starvation.

8 Pathophysiology of common diseases
   a. Parkinsonism
   b. Schizophrenia
   c. Depression and mania
   d. Hypertension,
   e. Stroke (ischaemic and hemorrhage)
   f. Angina, CCF, Atherosclerosis, Myocardial infarction
   g. Diabetes Mellitus
   h. Peptic ulcer and inflammatory bowel diseases
   i. Cirrhosis and Alcoholic liver diseases
   j. Acute and chronic renal failure
   k. Asthma and chronic obstructive airway diseases

9 Infectious diseases :
   Sexually transmitted diseases (HIV,Syphilis,Gonorrhea), Urinary tract infections, Pneumonia, Typhoid, Tuberculosis, Leprosy, Malaria Dysentery (bacterial and amoebic), Hepatitis- infective hepatitis.

4. Assignments :

Title of the Experiment

1 Chemical Mediators of inflammation
2 Drug Hypersensitivity
3 Cigarette smoking & its ill effects
4 Biological Effects of Radiation
5 Etiology and hazards of obesity
6 Complications of diabetes
7 Diagnosis of cancer
8 Disorders of vitamins
9 Methods in Pathology-Laboratory values of clinical significance
10 Pathophysiology of Dengue Hemorrhagic Fever (DHF)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PATIENT ATTITUDE TOWARDS ANTIPSYCHOTIC DRUGS AND EFFECT OF COUNSELING ON MEDICATION ADHERENCE IN SCHIZOPHRENIA AND PSYCHOSIS

V year Pharm.D (Doctor of Pharmacy)

Dissertation submitted to the Andhra University

By

B. KRISHNA CHAITANYA (Reg. No. 613171602001)

N. YASHODA KIRANMAI (Reg. No. 613171602013)

S. KALYANI LAKSHMI (Reg. No. 613171602021)

V. DEEPTHI (Reg. No. 613171602026)

Under the Guidance of

D.RAVI PRAKASH (PharmD)

Assistant Professor

Department of Pharmacy Practice

Aditya Pharmacy College

Surampalem- 533437

September, 2017

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE
(Approved by AICTE,PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

Dr. K. Divakar *M. Pharm., Ph.D.*
Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **"PATIENT ATTITUDE TOWARDS ANTIPSYCHOTIC DRUGS AND EFFECT OF COUNSELING ON MEDICATION ADHERENCE IN SCHIZOPHRENIA AND PSYCHOSIS."** is submitted to the Andhra University in partial fulfillment for the award of degree of **Doctor of Pharmacy**. This is a bonafide work carried out by B.Krishna chaitanya (Reg. No.613171602001), N.Yashoda kiranmai (Reg. No.613171602013), S.Kalyani lakshmi (Reg. No.613171602021), V.Deepthi (Reg. No.613171602026) under the guidance and supervision of **D.Ravi prakash**, Assistant Professor, Aditya Pharmacy College, Surampalem.

Date: 14/9/17.
Place: Surampalem

PRINCIPAL
(Dr.K. Divakar)
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE
(Approved by AICTE,PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We B.Krishna chaitanya, N.Yashoda kiranmai, S.Kalyani Lakshmi, V.Deepthi, here by we declare that the investigations, findings in the dissertation entitled "PATIENT ATTITUDE TOWARDS ANTIPSYCHOTIC DRUGS AND EFFECT OF COUNSELING ON MEDICATION ADHERENCE IN SCHIZOPHRENIA AND PSYCHOSIS" is a bonafide research work done under the guidance of D.Ravi prakash, Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D)

B.KRISHNA CHAITANYA (Reg. No. 613171602001)

N.YASHODA KIRANMAI (Reg. No. 613171602013)

S.KALYANI LAKSHMI (Reg. No. 613171602021)

V.DEEPTHI (Reg. No. 613171602026)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

CONCLUSION

The study results demonstrate that there is an effect of general patient counselling on medication adherence. By this study we conclude that a good relationship with physician or with other health care providers in appropriately taking medication, using tips so to remember to take the medication, absence of common perception that the inherently unsafe, patient education, awareness of side effects of anti-psychotics are the indicators of adherence to antipsychotic medication in patients with various psychotic disorders like schizophrenia and psychosis.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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

ADITYA PHARMACY COLLEGE * SURAMPALEM *
PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM-533 437

A STUDY OF INCIDENCE, TYPES, ETIOLOGY AND MANAGEMENT OF SEIZURES IN CHILDREN OF AGE GROUP 5 MONTHS TO 6 YEARS IN PEDIATRICS I.C.U/WARD IN A TERTIARY CARE HOSPITAL, KAKINADA, ANDHRA PRADESH.

V year Pharm.D (Doctor of Pharmacy) Dissertation submitted to the Andhra University

By

Alluri. Divya Sai Radha	(Regd. No. 613171602005)
Mandarapu. Krishna Priya	(Regd. No. 613171602010)
Parapalli. Deepak Veera Durga Mani Sai	(Regd. No. 613171602016)
Talla. Bhanu Sree	(Regd. No. 613171602025)

Under the Guidance of

S. NAGESWARA RAO M.Pharm (Ph.D)

Assistant Professor

Department of Pharmacy Practice

Aditya Pharmacy College

Surampalem- 533437

September, 2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE * SURAMPALEM *

ADITYA PHARMACY COLLEGE

(Approved by AICTE,PCI and affiliated to Andhra University.)

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

Pin: 533437, Ph: 08852 200005

Dr. K. Divakar *M. Pharm., Ph.D.*

Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **A STUDY OF INCIDENCE, TYPES, ETIOLOGY AND MANAGEMENT OF SEIZURES IN CHILDREN OF AGE GROUP 5 MONTHS TO 6 YEARS IN PEDIATRICS I.C.U/WARD IN A TERTIARY CARE HOSPITAL, KAKINADA, ANDHRA PRADESH."** is submitted to the Andhra University in partial fulfillment for the award of degree of **Doctor of Pharmacy.** This is a bonafide work carried out by **Alluri. Divya Sai Radha (Regd. No. 613171602005) Mandarapu. Krishna Priya (Regd. No. 613171602010) Parapalli. Deepak Veera Durga Mani Sai (Regd. No. 613171602016) Talla. Bhanu Sree (Regd. No. 613171602025)** under the guidance and supervision of **S. NAGESWARA RAO M.Pharm (Ph.D)**, Assistant Professor, Aditya Pharmacy College, Surampalem.

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM 533 43

Date: 11/9/17

Place: Surampalem

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL

(Dr.K. Divakar)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE SURAMPALEM

ADITYA PHARMACY COLLEGE
(Approved by AICTE,PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We A. Divya Sai Radha, M. Krishna Priya, P. Deepak Veera Durga Mani Sai, T.Bhanu Sree here by declare that the investigations, findings in the dissertation entitled **"A STUDY OF INCIDENCE, TYPES, ETIOLOGY AND MANAGEMENT OF SEIZURES IN CHILDREN OF AGE GROUP 5 MONTHS TO 6 YEARS IN PEDIATRICS I.C.U/WARD IN A TERTIARY CARE HOSPITAL, KAKINADA, ANDHRA PRADESH."** is a bonafide research work done under the guidance of **S. NAGESWARA RAO** M.Pharm (Ph.D), Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D)

Alluri. Divya Sai Radha	**(Regd. No. 613171602005)**
Mandarapu. Krishna Priya	**(Regd. No. 613171602010)**
Parapalli. Deepak Veera Durga Mani Sai	**(Regd. No. 613171602016)**
Talla. Bhanu Sree	**(Regd. No. 613171602025)**

PRINCIPAL
Aditya Pharmacy Coll-
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

CONCLUSION:

- We found that the children of age group less than 1 year (40.3%) have high onset of seizures. So, we conclude that the incidence of seizures is maximum during the early stages of the life and their frequency decreases with increase in age of the children.
- Generalized tonic clonic seizures (62.3%) are the commonest type of seizures and are seen in majority of the children.
- Febrile seizures (30.2%) were the leading etiology among our study.
- Monotherapy (58.7%) were given to the majority of the patients in our study. So we conclude that the Use of a single antiepileptic drug was enough to control the seizures in majority of children while the others required the use of two or more drugs for obtaining the required therapeutic outcome.

Overall in our study we found out that proper identification of the type and etiology of the seizure helps in selecting the appropriate treatment to be given and also determining the better prognosis of the disease.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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, Gonarrhoea and Syphillis
   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

PRINCIPAL
Aditya Pharmacy Col
SURAMPALEM-533 4;
ADITYA PHARMACY COLLEGE * SURAMPALEM *

COMPARATIVE PREVALENCE STUDY ON RESPIRATORY PROBLEMS AND SEPSIS IN INFANTS TO CHILDREN AND THEIR COMPLICATIONS IN TERITIARY CARE HOSPITAL: A DESCRIPTIVE OBSERVATIONAL STUDY

V year Pharm.D (Doctor of Pharmacy) Dissertation submitted to the

Andhra University

By

M.RAJA VENKATESH. (Reg. No. 613171602011)

P.GEETHIKA. (Reg. No. 613171602017)

V.ADITYA RANGANATH. (Reg. No. 613171602027)

Under the Guidance of

Dr.R.RAVI PRAKASH (Pharma.D)
Assistant Professor,
Department of Pharmacy Practice,
Aditya Pharmacy College, Surampalem

Dr.C.N.MOHANCHANDRAN.M.D,
Associate Professor ,
Department of Paediatrics,
R.M.C/G.G.H, Kakinada

Department of Pharmacy. Practice
Aditya pharmacy college
Surampalem- 533437,

2017.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE

(Approved by AICTE,PCI and affiliated to Andhra University.)

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

Pin: 533437, Ph: 08852 200005

Dr. K. Divakar *M. Pharm., Ph.D.*

Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **"COMPARATIVE PREVALENCE STUDY ON RESPIRATORY PROBLEMS AND SEPSIS IN INFANTS TO CHILDREN AND THEIR COMPLICATIONS IN TERITIARY CARE HOSPITAL: A DESCRIPTIVE OBSERVATIONAL STUDY."** is submitted to the Andhra University in partial fulfillment for the award of degree of **Doctor of Pharmacy.** This is a bonafide work carried out by **M.Raja Venkatesh (Reg. No.613171602011), P.Geethika (Reg. No.613171602017),V.Aditya Ranganath (Reg. No.613171602027)** under the guidance and supervision of **Dr.D.Ravi Prakash,** Assistant Professor, Aditya Pharmacy College, Surampalem.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Date: 13/9/17

Place: Surampalem

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL

(Dr.K. Divakar)

PRINCIPAL
ADITYA INSTITUTE OF PHARMACEUTICAL SCIENCES & RESEARCH
SURAMPALEM – 533 437

ADITYA PHARMACY COLLEGE SURAMPALEM

ADITYA PHARMACY COLLEGE

(Approved by AICTE,PCI and affiliated to Andhra University.)

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

Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We **M.Raja Venkatesh, P.Geethika, V.Aditya Ranganath** here by declare that the investigations, findings in the dissertation entitled **"COMPARATIVE PREVALENCE STUDY ON RESPIRATORY PROBLEMS AND SEPSIS IN INFANTS TO CHILDREN AND THEIR COMPLICATIONS IN TERITIARY CARE HOSPITAL: A DESCRIPTIVE OBSERVATIONAL STUDY"** is a bonafide research work done under the guidance of **Dr.D.Ravi Prakash,** Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D).

M. Raja Venkatesh

M.RAJA VENKATESH. (Reg. No. 613171602011)

P. Geethika.

P.GEETHIKA. (Reg. No. 613171602017)

V. Adityaj

V.ADITYA RANGANATH. (Reg. No. 613171602027)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

CONCLUSION:

- Under our project Infants were more subjected to infections compared to children, and Females were more exposed compared to Males. Children of uneducated mothers were mostly exposed to infections due to lack of knowledge. And rural area children were more exposed to infections due to lack of awareness and hygienic conditions.
- Under our project fever and cough&cold are main symptoms experienced mostly in case of infants than children.
- Estimated that infants are mostly subjected to infections like pneumonia when compared to other categories.
- Mainly infants are more subjected to respiratory infections like pneumonia, broncholitis compared to other categories like toddlers and children's due to definite risk factors like LBW, Malnutrition, jaundice.
- Mainly complications include meningitis, urinary tract infections, and febrile seizures. Infants and children.
- In our comparative study disease severity and complications of respiratory tract infections like (pneumonia, bronchoilitis) and sepsis according to age wise was observed and reported. In our country many studies were conducted on these streptococcal infections and identified that risk factors like LBW, Jaundice, Malnutrition, History of experiencing infections are more responsible for future complications like Meningitis and Febrile seizures and UTI'S frequently in children's. A part from these maternal complications like GBS infections in 3rd trimester was treated with suitable antibiotics that may decrease future complications in infants. Pneumococcal vaccinations was given to the children in correct time in required doses may stop infection prognosis in toddlers and children. Maintaining hygienic conditions may also reduce disease prognosis in children in future.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

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).

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

FACTORS AFFECTING QUALITY OF LIFE IN PATIENTS SUFFERING FROM CVA (STROKE) WITH HEMIPARESIS.

V year Pharm.D (Doctor of Pharmacy)

Dissertation submitted to the Andhra University

By

D. RATNA KUMAR	(Reg. No. 613171602002).
VIVEK KUMAR	(Reg. No. 613171602029).
P.B.K.R.N.SAI PAVAN	(Reg. No. 612171602015).

Under the Guidance of

A. TIRUPATHI RAO M.Pharm(Ph.D)

Assistant Professor

Department of Pharmacy Practice

Aditya Pharmacy College

Surampalem- 533437

September, 2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE * SURAMPALEM *

ADITYA PHARMACY COLLEGE

(Approved by AICTE, PCI and affiliated to Andhra University.)

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

Pin: 533437, Ph: 08852 200005

Dr. K. Divakar *M. Pharm., Ph.D.*

Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **"FACTORS AFFECTING QUALITY OF LIFE IN PATIENTS SUFFERING FROM CVA (STROKE) WITH HEMEPARESIS"** is submitted to the Andhra University in partial fulfillment for the award of degree of Doctor of Pharmacy. This is a bonafide work carried out by D. Ratna kumar (Reg. No.613171602002), Vivek Kumar (Reg. No. 613171602029), P.B.K.R.N.Sai Pavan (Reg. No.612171602015), V Pharm.D. Under the guidance and supervision of A. Tirupathi Rao, Assistant Professor, Aditya Pharmacy College, Surampalem.

Date: 11/09/2017

Place: Surampalem

ADITYA PHARMACY COLLEGE SURAMPALEM

PRINCIPAL

(Dr. K. Divakar)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM-533 437

PRINCIPAL
Aditya Pharmacy Colle
SURAMPALEM-533 437

ADITYA PHARMACY COLLEGE SURAMPALEM

ADITYA PHARMACY COLLEGE
(Approved by AICTE,PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We D. Ratna Kumar ,Vivek Kumar, P.B.K.R.N.Sai Pavan hereby declare that the investigations, findings in the dissertation entitled "**FACTORS AFFECTING QUALITY OF LIFE IN PATIENTS SUFFERING FROM CVA (STROKE) WITH HEMEPARESIS**" is a bonafide research work done under the guidance of **A. Tirupathi Rao,** Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D).

D.RATNA KUMAR (Reg. No. 613171602002).

VIVEK KUMAR (Reg. No. 613171602029).

P.B.K.R.N.SAI PAVAN (Reg. No. 612171602015).

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

CONCLUSION

According to this study we can conclude that Hypertension,Previous Episodes & Gender are significant while, Diabetes, Smoker & Alcohol are non-significant in CVA with hemiparesis. We can also conclude that males are more prone to CVA than Females. Hypertensive patients are more affected then non-hypertensive patients.

Statistical significant association is found between the domains of patients before & after treatment is Physical Functioning (<0.0001), Role limitations due to Physical Health (<0.0001), Role limitations due to Emotional Problems (<0.0001), Energy/ Fatigue (<0.0001), Emotional Well Being (0.0107), Social Functioning (<0.0001), Pain (0.0001) & General Health (<0.0001).

Statistical significant association is found between the Factors & QOL of stroke patients is Hypertension (0.0107), Previous Episodes (0.0005) & Gender (0.0013).

As hypertension is modifiable risk factor we can prevent it by using Medication, Dietary changes as well as Life style modification.

Life style changes can help you control high blood pressure, even if you are taking blood pressure medication. Here is what you can do:

- Eat healthy food.
- Decrease salt in your diet.
- Maintain healthy weight.
- Increase physical activity.
- Limit alcohol.
- Don't smoke.
- Manage stress.
- Monitor blood pressure at home.
- Practise relaxation or slow, deep breathing.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

2.4 PHARMACOLOGY – I (THEORY)

Theory : 3 Hrs. /Week

1. **Scope of the Subject:** This subject will provide an opportunity for the student to learn about the drug with regard to classification, pharmacodynamic and pharmacokinetic aspects, adverse effects, uses, dose, route of administration, precautions, contraindications and interaction with other drugs. In this subject, apart from general pharmacology, drugs acting on autonomic nervous system, cardiovascular system, central nervous system, blood and blood forming agents and renal system will be taught. In addition to theoretical knowledge, the basic practical knowledge relevant to therapeutics will be imparted.

2. **Objectives of the Subject :** Upon completion of the subject student shall be able to (Know, do, appreciate) –
   a. understand the pharmacological aspects of drugs falling under the above mentioned chapters;
   b. handle and carry out the animal experiments;
   c. appreciate the importance of pharmacology subject as a basis of therapeutics; and
   d. correlate and apply the knowledge therapeutically.

Text books (Theory) (Author, Title, Edition, Publication Place, Publisher, Year of Publication)

a. Tripathi, K. D. Essentials of medical pharmacology. 4th Ed, 1999. Publisher: Jaypee, Delhi.
b. Satoskar, R.S. and Bhadarkar, S.D. Pharmacology and pharmacotherapeutics. 16th edition (single volume), 1999. Publisher: Popular, Dubai.
c. Rang, H.P. & Dale, M.M. Pharmacology. 4th edition, 1999. Publisher: Churchill Living stone.

Reference books (Theory)(Author, Title, Edition, Publication Place, Publisher, Publication Year)

a. Goodman Gilman, A., Rall, T.W., Nies, A.I.S. and Taylor, P. Goodman and Gilman's The pharmacological Basis of therapeutics. 9th Ed, 1996. Publisher Mc Graw Hill, Pergamon press.
b. Craig, C.R.&Stitzel, R.E. Modern Pharmacology. Latest edition. Publisher: Little Brown.Co
c. Katzung, B.G. Basic and clinical pharmacology. Latest edition. Publisher: Prentice Hall, Int.
d. Shargel and Leon. Applied Biopharmaceutics and pharmacokinetics. Latest edition. Publisher: Prentice Hall, London.

PRINCIPAL
Aditya Pharmacy Colleg
SURAMPALEM 533 437

Text books (Practical) :

Kulkarni, S. K. and Dandia, P. C. Hand book of experimental pharmacology. Latest edition, Publisher: Vallab, Delhi.

Reference books (Practical)

a. Macleod, L.J. Pharmacological experiments on intact preparations. Latest edition, Publisher: Churchill livingstone.

ADITYA PHARMACY COLLEGE
SURAMPALEM

b. Macleod, L.J. Pharmacological experiments on isolated preparations. Latest edition, Publisher: Churchill livingstone.
c. Ghosh, M.N. Fundamentals of experimental pharmacology. Latest edition, Publisher: Scientific book agency, Kolkata.
d. Ian Kitchen. Textbook of in vitro practical pharmacology. Latest edition, Publisher: Black well Scientific.

3. Detailed syllabus and lecture wise schedule :

Title of the topic

1. **General Pharmacology**
   a) Introduction, definitions and scope of pharmacology
   b) Routes of administration of drugs
   c) Pharmacokinetics (absorption, distribution, metabolism and excretion)
   d) Pharmacodynamics
   e) Factors modifying drug effects
   f) Drug toxicity - Acute, sub- acute and chronic toxicity.
   g) Pre-clinical evaluations
   h) Drug interactions

   Note: The term Pharmacology used here refers to the classification, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, Therapeutic uses, interactions and dose and route of administration.

2. **Pharmacology of drugs acting on ANS**
   a) Adrenergic and antiadrenergic drugs
   b) Cholinergic and anticholinergic drugs
   c) Neuromuscular blockers
   d) Mydriactics and miotics
   e) Drugs used in myasthenia gravis
   f) Drugs used in Parkinsonism

3. **Pharmacology of drugs acting on cardiovascular system**
   a) Antihypertensives
   b) Anti-anginal drugs
   c) Anti-arrhythmic drugs
   d) Drugs used for therapy of Congestive Heart Failure
   e) Drugs used for hyperlipidaemias

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

4. **Pharmacology of drugs acting on Central Nervous System**
   a) General anesthetics
   b) Sedatives and hypnotics
   c) Anticonvulsants
   d) Analgesic and anti-inflammatory agents
   e) *Psychotropic drugs*
   f) Alcohol and methyl alcohol
   g) CNS stimulants and cognition enhancers
   h) Pharmacology of local anaesthetics

5. **Pharmacology of Drugs acting on Respiratory tract**
   a) Bronchodilators
   b) Mucolytics
   c) Expectorants
   d) Antitussives
   e) NasalDecongestants

6. **Pharmacology of Hormones and Hormone antagonists**
   a) Thyroid and Antithyroid drugs
   b) Insulin, Insulin analogues and oral hypoglycemic agents
   c) Sex hormones and oral contraceptives
   d) Oxytocin and other stimulants and relaxants

7. **Pharmacology of autocoids and their antagonists**
   a) Histamines and Antihistaminics
   b) 5-Hydroxytryptamine and its antagonists
   c) Lipid derived autocoids and platelet activating factor

ADITYA PHARMACY COLLEGE - SURAMPALEM

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

COMPARISON OF QUALITY OF LIFE IN SCHIZOPHRENIA AND BIPOLAR AFFECTIVE DISORDER IN GOVERNMENT GENERAL HOSPITAL PSYCHIATRIC OPD: A CROSS SECTIONAL OBSERVATIONAL STUDY

V year Pharm.D (Doctor of Pharmacy) Dissertation submitted to the

Andhra University

By

K.SWAPNA	(Reg. No. 613171602008)
M.SAI APARNA	(Reg. No. 613171602012)
NDS. BHAVANI	(Reg.No. 613171602014)
CH.SOWJANYA	(Reg. No. 613171602024)

Under the Guidance of

A.Tirupathi rao M.Pharm(Ph.D)
Assistant Professor,
Department of Pharmacology,
Aditya Pharmacy College, Surampalem.

Dr,V Niveditha M.D,
Assistant Professor,
Department of Psychiatry,
R.M.C/ G.G.H, Kakinada

Department of Pharmacy Practice

Aditya Pharmacy College

Surampalem- 533437

2017

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

INTERNAL EXAMINER

EXTERNAL EXAMINER

ADITYA PHARMACY COLLEGE SURAMPALEM

ADITYA PHARMACY COLLEGE
(Approved by AICTE, PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

Dr. K. Divakar *M. Pharm., Ph. D.*
Principal & Professor

CERTIFICATE

This is to certify that the dissertation work entitled **"COMPARISON OF QUALITY OF LIFE IN SCHIZOPHRENIA AND BIPOLAR AFFECTIVE DISORDER IN GOVERNMENT GENERAL HOSPITAL PSYCHIATRIC OPD: A CROSS SECTIONAL OBSERVATIONAL STUDY"** is submitted to the Andhra University in partial fulfillment for the award of the degree of **Doctor of Pharmacy**. This is a bonafide work carried out by K.Swapna (Reg. No. 613171602008), M.Sai Aparna (Reg. No. 613171602012), N.D.S.Bhavani (Reg.No.613171602014) and Ch.Sowjanya(Reg.No. 613171602024) under the guidance and supervision of **Mr. A.Tirupathi rao**, Assistant Professor, Aditya Pharmacy College, Surampalem.

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

Date: 20 – 09 –17-
Place: Surampalem

PRINCIPAL
(Dr.K. Divakar)
PRINCIPAL
Aditya Pharmacy College
SURAMPALEM

ADITYA PHARMACY COLLEGE • SURAMPALEM •

ADITYA PHARMACY COLLEGE • SURAMPALEM •

ADITYA PHARMACY COLLEGE
(Approved by AICTE, PCI and affiliated to Andhra University.)
Aditya Nagar, ADB Road, Surampalem, E. G. Dist., A.P.
Pin: 533437, Ph: 08852 200005

DECLARATION BY THE CANDIDATES

We **K.Swapna, M.SaiAparna, N.D.S Bhavani and CH.Sowjanya** hereby declare that the investigations, findings in the dissertation entitled **"COMPARISON OF QUALITY OF LIFE IN SCHIZOPHRENIA AND BIPOLAR AFFECTIVE DISORDER IN GOVERNMENT GENERAL HOSPITAL PSYCHIATRIC OPD: A CROSS SECTIONAL OBSERVATIONAL STUDY"** is a bonafide research work done under the guidance of **A.Tirupathi rao,** Assistant Professor, in partial fulfillment of the requirement of V year Doctor of Pharmacy (Pharm.D)

K.Swapna

K.SWAPNA (Reg. No. 613171602008)

M.Sai Aparna

M.SAI APARNA (Reg. No. 613171602012)

N.D.S Bhavani

N.D.S BHAVANI (Reg. No. 613171602014)

Ch.Sowjanya

CH.SOWJANYA (Reg. No. 613171602024)

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437

ADITYA PHARMACY COLLEGE * SURAMPALEM *

MEASURES TO IMPROVE QOL

- Encouraging the patients to attend psycho-education groups/programs may help them to develop their quality of life.
- Counseling the patients and care takers regarding disease and importance of using medication in both disabilities prevents severity of disease.
- Family (especially the spouse) interventions and support can contribute to the stability of the schizophrenic patients, enabling them to function in the mainstream society and improve the quality-of-life
- Therapies targeting the regulation of biological rhythms such as IPSRT(Interpersonal and social rhythm therapy), exercise, psycho-education, light therapy, sleep hygiene, cognitive behavioral therapy will have a direct impact in improving QOL along with symptom recovery in BD.
- Several studies have found that schizophrenia patients who smoke need higher doses of antipsychotic medication, but incase of substance abuse patients higher dose is recommended.

ADITYA PHARMACY COLLEGE * SURAMPALEM *

PRINCIPAL
Aditya Pharmacy College
SURAMPALEM 533 437