Drugs and pharmaceutical industry plays a vital role in the economic development of a nation. It is one of the largest and most advanced sectors in the world, acting as a source for various drugs, medicines and their intermediates as well as other pharmaceutical formulations. India has come a long way in this field, from a country importing more than 95% of its requirement of drugs and pharmaceuticals; India now is exporting it even to developed countries. Being the intense knowledge driven industry, it offers innumerable business opportunities for the investors/ corporate the world over. The existence of well defined and strong pharmaceutical industry is important for promoting and sustaining research and developmental efforts and initiatives in an economy as well as making available the quality medicines to all at affordable prices. That is, it is essential to improve the health status of the individuals as well as the society as a whole, so that positive contributions could be made to the economic growth and regional development of a country. On the global platform, India holds fourth position in terms of volume and thirteenth position in terms of value of production in pharmaceuticals. The pharmaceutical industry has been producing bulk drugs belonging to all major therapeutic groups requiring complicated manufacturing processes as well as a wide range of pharmaceutical machinery and equipments. The modern Indian Pharmaceutical Industry is recent and its foundation was laid in the beginning of the current century. The pharmaceutical industry can be broadly categorised as bulk drugs, formulations, IV fluids and pharmaceutical aids (such as medical equipment, hospital disposables, capsules, etc.). Special feature of the pharmaceutical industry is a large number of manufacturers in the small scale sector. The government is also encouraging the SSI sector providing some incentives. The recent developments in the technology and R & D work in this field have led to the increased growth rate of industries and have established Indian Pharmaceutical industries in the international market.

The content of the book includes information about properties, general methods of analysis, methods of manufacture, of different types of drugs and pharmaceuticals. Some of the fundamentals of the book are polymeric materials used in drug delivery systems, theoretical aspects of friction and lubrication, a convenient method for conversion of quinine to quinidine, formulation and evaluation of bio-available enteric-coated erythromycin and metronidazole tablets, extraction of virginiamycin, antipyretics and analgesics, column chromatographic assay of aspirin tablets, differentiating titration of phenacetin and caffeine, infrared spectra of some compounds of pharmaceutical interest etc.

This book covers an intensive study on manufacturing, production, formulation and quality control of drugs and pharmaceuticals with technology involved in it. This book is an invaluable resource for technologists, professionals and those who want to venture in this field.

Contents

1. INTRODUCTION
2. POLYMERIC MATERIALS USED IN DRUG DELIVERY SYSTEMS
Preparation of polymers
Addition (chain reaction) polymerization
Condensation (step-growth) polymerization
Crosslinked polymers
Copolymerization
More complex co-polymer systems

3. PROPERTIES OF FATTY ALCOHOL MIXED EMULSIFIERS AND EMULSIFYING WAXES
Mixed emulsifier components
Fatty alcohols
Surfactants
Mixed emulsifiers and emulsifying waxes

4. TABLET LUBRICANTS
Theoretical aspects of friction and lubrication
Mechanisms of friction
Boundary lubrication
Applications to tableting
Chemical composition of lubricants
Metallic salts of fatty acids (soaps)
Fatty acids, hydrocarbons and fatty alcohols
Fatty acid esters
Alkyl sulphates
Polymers
Inorganic materials
Miscellaneous materials
Effects of lubricants on the manufacture and properties of tablets
Batch variation of lubricants
Processing
Tablet properties
Magnesium stearate
Commercial materials and batch variation
Pure grade materials
Selection of Lubricants

5. PARACETAMOL-AN ANALYSIS OF TECHNOLOGIES FOR CLEANER PRODUCTION

6. A MODIFIED PROCESS FOR CONVERSION OF - PICOLINE TO NOCOTINIC ACID
Experimental Procedure
Experimental Data

7. A CONVENIENT METHOD FOR CONVERSION OF QUININE TO QUINIDINE
Experimental Procedure
Reduction of quinidinone with alane

8. SUSTAINED RELEASE SALBUTAMOL TABLETS - THEORETICAL CONSIDERATIONS
Theoretical considerations
Calculation of Sustained Release Parameters for Salbutamol Sulphate

9. SUSTAINED RELEASE SALBUTAMOL TABLETS - FOR MULATION ENGINEERING AND EVALUATION USE OF FAT AND WAX MATRIX
Materials and methods
Discussion

10. SUSTAINED RELEASE SALBUTAMOL TABLETS - FORMULATION ENGINEERING AND EVALUATION COMPOSITE WAX MATRIX AND INFLUENCE OF ADDITIVES
Materials and methods
Results and Discussion

11. FEASIBILITY OF PRODUCTION OF CHOLERA VACCINE IN FERMENTOR
Materials and methods
Media
Results and Discussion

12. MODIFICATION OF BEESWAX FOR ITS APPLICATION IN TABLET COATING
Materials and methods
Results and discussion

13. FORMULATION AND EVALUATION OF BIO-AVAILABLE ENTERIC-COATED ERYTHROMYCIN AND METRONIDAZOLE TABLETS
Materials and Methods
Coating formulations
Coating process
Dissolution rate studies
Methods of analysis
Results and discussion
Conclusion

14. REDUCING - SUBSTANCES-FREE ACETIC ANHYDRIDE FOR PHARMACEUTICAL INDUSTRIES
Experimental procedure
Materials
Procedure
Results and discussion

15. ANTHRACYCLINE ANTIBIOTICS (DAUNORUBICIN AND ADRIAMYCIN)
Biosynthesis
A. Origin of the Carbon Skeleton
B. Biosynthetic Interrelationships
Fermentation and Recovery
A. Inoculum Preparation and Production of Daunorubicin
B. Isolation and Purification of Daunorubicin
C. Inoculum Preparation and Production of Adriamycin
D. Isolation and Purification of Adriamycin

16. 6-APA
Production of 6-Apa using Penicillin Acylase
A. Enzymation of Penicillin G
B. Extraction of 6-APA

17. EXTRACTION OF VIRGINIAMYCIN
18. SAGAMICIN
Fermentation Process

19. CHEMOTHERAPEUTICS, ANTIVIRAL
Antiviral Agents Effective in Humans
Thiosemicarbazones
Amantadine Hydrochloride
5-Iodo-2’-deoxyuridine
Trifluorothymidine
Arabinosylcytosine
Arabinosyladenine
Ribavirin
Interferon
Immunopotentiating Agents
Future of Antiviral Chemotherapy

20. CHEMOTHERAPEUTICS, ANTIPROTOZOAL
Coccidiosis
Thiamine Competitors
Antifolates
Antibiotics
Nitrobenzamides and Nitrofurans
Toxoplasmosis
Anaplasmosis
Babesiasis
Theileriasis
Trypanosomiasis
African Trypanosomiasis
Chagas’ Disease
Leishmaniasis
Pneumocystosis
Trichomoniasis
Hexamitosis
Balantidial Dysentery
Giardiasis
Amebiasis
Intestinal Amebiasis
Primary Amebic Meningo-Encephalitis
The Malarias
Drugs Acting on Asexual Blood Forms
Drugs Affecting Tissue Forms
Drugs Acting on Gametocytes
Action Spectra of Antiprotozoal Drugs
Economic considerations

21. CHEMOTHERAPEUTICS, ANTIMYCOTIC AND ANTIRICKETTSIAL
Mycotic Infections
Superficial Mycoses
Systemic and Generalized Mycoses
Antifungal Agents
The Polyene Antibiotics
Candidin
Pimaricin
Nonpolyene Antifungal Antibiotics
Griseofulvin
Cycloheximide
Other antifungal agents
Synthetic Antifungal Agents
Nonspecific Systemic Medications
5-Fluorocytosine
Imidazole Compounds
Tolnaftate
Haloprogin
Agricultural Use of Antifungal Agents
Rickettsial Infections
Treatment of Rickettsial Infections

22. CHEMOTHERAPEUTICIS, ANTIMITOTIC

Drug Classification
Alkylating Agents
Antimetabolites
Antibiotics
Plant alkaloids
Miscellaneous Agents
Hormones
Combination therapy
Multidrug Treatment
Immunology
Drug Toxicity
Radiation Therapy

23. CHEMOTHERAPEUTICS, ANTHELMINTIC

Treatment of Blood Fluke Disease (Schistosomiasis)
Treatment of Fluke (Trematode) Infections in the Lungs, Intestines, and Liver
Treatment of Tapeworm (Cestode) Infections
Treatment of Intestinal Roundworm (Nematode) Infections
Treatment of Tissue Roundworm (Nematode) Infections

24. ANTIPYRETICS AND ANALGESICS

Salicylic Acid and its Derivatives
Methods of Manufacture
Sodium Salicylate
Aspirin
Salicylamide
Salicylic Acid
Sodium salicylate
Aspirin
Salicylamide
Methods of Analysis
Separation and Identification
Extraction into Sodium Bicarbonate Solution
Procedure
Separation by Column Chromatography
Procedures
Preparation of Chromatographic Column  
Preparation of Samples  
Separation of Components  
Separation by Gas Chromatography  
Procedures  
Preparation of Column  
Preparation of Samples  
Separation of Components  
Identification  
Procedures  
Test with Ferric Chloride  
Percipitation of Salicylic Acid  
Assay Methods  
Titrimetric Assay of Aspirin Capsules  
Procedure  
Column Chromatographic Assay of Aspirin Tablets  
Procedures  
Preparation of Column  
Preparation of Samples and Standard  
Analysis of Samples  
Assay by Gas Chromatography  
Procedures  
Preparation of Column  
Calibration  
Assay of sample for aspiring content  
Determination of Impurities  
Determination of free salicylic acid in aspirin  
Chromatographic Method  
Procedures  
Preparation of Reagent  
Preparation of Salicylic Acid Standard  
Preparation of Column  
Analysis of Aspirin and Aspiring Tablets  
APC Tablets and Flavoured Tablets  
Spectrophotometric Method  
Procedure  
Readily Carbonizable Substances in Aspirin  
Procedures  
Preparation of Reagents  
Cobaltous Chloride  
Cupric Sulphate  
Ferric Chloride  
Sulfuric Acid  
Testing of Sample  
Impurities in Salicylic Acid  
Ion Exchange Ultraviolet Method  
Procedures  
Preparation of Apparatus  
Preparation of Column  
Analysis of Samples  
Procedure  
Procedures  
Preparation of Plates
Preparation of Reagents & Standards
Preparation of Sample
Qualitative Detection
Quantitative Determination
Determination in mixtures
Determination After Separation by Extraction
Ultraviolet absorption method
Procedures
Calibration
Calculations
Heuermann And Levine Method
Procedures
Preparation of Sample
Preparation of Column
Separation of APC Organic base Combination
APC Barbiturate Combinations
TURI Method
Procedures
Preparation of Column
Preparation of Samples
Separation of Fractions
Spectrophotometric Measurement
Koshy Method
Procedures
Preparation of Column
Preparation of Samples
Separation of Components
Determination of Components
Determination by Gas Chromatography
Hoffman and Mitchell Method
Procedures
Calibration
Analysis of Samples
Crippen & Freinuth Method
Procedure
Preparation of Column
Operating Conditions
Preparation of Methylating Reagent
Preparation of Samples & Standards
Analysis of Samples
Calculations
Direct Spectrophotometric Procedure
Procedure
Preparation of Mixed Solvents
Preparation of Reference Solutions
Analysis of Samples
Development of Equations
Infrared and Ultraviolet Spectrometry
Procedures
Mixtures of Aspirin, Phenacetin and Caffeine
Mixtures of Aspirin, Phenacetin and Caffeine and Caffeine Phosphate
Mixtures of Aspirin, Phenacetin and Caffeine and Thymylpyramine Hydrochloride
Nonaqueous Titrations
Wollish Methods
Procedures
Determination of Aspirin in the Presence of Stearic Acid
Determination of Aspirin in the Absence of Stearic Acid
Determination of Phenacetin
Determination of Caffeine
APC Tablets in Combination with Phenindamine Tartrate
Determination of Phenacetin
Determination of phenindamine Tartrate
Lin and Blake Methods
Procedures
Determination of Aspiring in APC Mixtures
Differentiating Titration of Phenacetin and Caffeine
Differentiating Titration of Aspirin and Phenobarbital
Nuclear Magnetic Resonance Spectrometry
Procedures
Determination of Spectra
Calculations
Derivatives of Aniline and p-Aminophenol
Methods of Manufacture
Commercial Grades and Specifications
Methods of Analysis
Separation and Identification
Separation by Ion Exchange Paper Chromatography
Procedures
Preparation of Iodoplatinate Reagents
Extraction
Chromatography
Separation by Gas-Chromatography
Procedures
Preparation of Column
Operation Conditions
Calibration
Preparation of Samples
Separation of Components
Assay Methods
Gravimetric Methods
Procedure
Titrimetric Methods
Titration with Sodium Nitrite
Procedure
Iodometric Titration
Procedure
Assay Through Ethoxy Content
Procedure
Preparation of Reagent
Analysis of Sample
Calculations
Colorimetric Methods
Hydroxamic Acid Method
Procedure
Diazotation Procedures
Procedure
Spectrophotometric Methods
Procedure
Preparation of Reagent
Analysis of Sample
Gravimetric Method
Titrimetric Method
Polarographic Method
Procedure
Aminopyrine
Gravimetric Methods
Procedure
Assay of Elixir
Assay of Tablets
Acid-base Titration
Complexometric Titration
Procedures
Preparation of Reagents
Analysis of Samples
Bromate Titration
Procedure
Oxidative-Cleavage Method
Procedure
Colorimetric Methods
Procedure
Preparation of Diazotized P-Nitroaniline
Preparation of Sample Solution
Determination by Ferric Chloride
Determination of Diazotized P-Nitroaniline
Determination of Impurities
Antipyrine in Aminopyrine
Procedure
Determination in Mixtures
Antipyrine
Aminopyrine

25. ANTI-ASTHMATIC AGENTS
Adrenergic Stimulants
Anticholinergics
Inhibitors of the release of Allergic Mediators
Xanthine Derivatives
Prostaglandins
Other Drugs

26. PENICILLINS AND RELATED COMPOUNDS
Properties
General Method of Analysis
Separation and Identification
Chromatography
Spectroscopy
Other Methods
Assay Methods
Microbiological Methods
Chemical Methods
Iodometric Titration
Acid-Base Titration
Hydroxylamine Colorimetric Method
Ultraviolet Spectrophotometric Method
Determination of Impurities
Benzylpenicillin
Analysis of Benzylpenicillin
Microbiological Assay Methods
Procedure
Chemical Assay methods
Procedure
Allylimercaptomethylpenicillin
Analysis of Pencillin O
Microbiological Assay Methods
Chemical Assay Methods
Phenoxymercaptoethylpenicillin
Analysis of Phenoxymethylpenicillin
Microbiological Assay Methods
Chemical Assay Methods
Phenethicillin
Analysis of Phenethicillin
Microbiological Assay Methods
Chemical Assay Methods
Methicillin
Analysis of Methicillin
Microbiological Assay Methods
Chemical Assay Methods
Carbenicillin
Analysis of Carbenicillin
Microbiological Assay Methods
Procedure
Chemical Methods
Ampicillin
Analysis of Ampicillin
Microbiological Assay Methods
Procedure
Chemical Assay Methods
Isoxazolypenicillins
Analysis of Isoxazolylpenicillins
Microbiological Assay Methods
Chemical Assay Methods
Nafcillin
Microbiological Assay Methods
Chemical Assay Methods
Cephalsoporins
Analysis of Cephalosporins
Microbiological Assay Methods
Chemical Assay Methods
27. SULFONAMIDES
Therapeutic Aspects
Systemic infections
Urinary Tract Infections
Physical and Chemical Properties
Theoretical Aspects
Biological Mechanism of Action
Preparation and Manufacture
N1-Heterocyclic Sulfanilamides
N1-Acylsulfanilamides
N1-Heterocyclic-N4-Acylsulfanilamides
N1-Heterocyclic-N1-Acetylsulfanilamides
Miscellaneous Compounds
General Anesthetics, Volatile and Gaseous
Nitrous Oxide
Cyclopropane
Diethyl Ether
Fluroxene
Methoxyflurane
Halothan
Enflurane
Isoflurane
General Anesthetics, Fixed
Ultrashort-Acting Barbiturates
Propanidid
Ketamine
Innovar
Althesin
Etomidate
Spinal Anesthetics
Metabolism and Toxicity of Volatile Anesthetics
Adjuncts to General Anesthesia
Local Anesthetics
Benzocaine
Bupivacaine Hydrochloride
Cocaine Hydrochloride
Dibucaine Hydrochloride
Dimethisoquin Hydrochloride
Dyclonine Hydrochloride
Lidocaine Hydrochloride
Pramoxine Hydrochloride
Procaine Hydrochloride
Tetracaine Hydrochloride

28. INFRARED SPECTRA OF SOME COMPOUNDS OF PHARMACEUTICAL INTEREST

DIRECTORY SECTION

PHARMACEUTICAL / BIOTECHNOLOGY COMPANIES

WORLD WIDE PHARMACY RESOURCES
About NIIR

NIIR PROJECT CONSULTANCY SERVICES (NPCS) is a reliable name in the industrial world for offering integrated technical consultancy services. NPCS is manned by engineers, planners, specialists, financial experts, economic analysts and design specialists with extensive experience in the related industries.


NPCS also publishes varies process technology, technical, reference, self employment and startup books, directory, business and industry database, bankable detailed project report, market research report on various industries, small scale industry and profit making business. Besides being used by manufacturers, industrialists and entrepreneurs, our publications are also used by professionals including project engineers, information services bureau, consultants and project consultancy firms as one of the input in their research.

NIIR PROJECT CONSULTANCY SERVICES , 106-E, Kamla Nagar, New Delhi-110007, India. Email: npcs.india@gmail.com Website: NIIR.org