Pharm.D Syllabus

Year 02

Subjects

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2.1 - Pathophysiology

Theory

- Basic principles of cell injury and Adaptation
- Causes, Pathogenesis and morphology of cell injury
- Abnormalities in lipoproteinaemia, glycogen infiltration and glycogen infiltration and glycogen infiltration and glycogen storage diseases 2 Inflammation
- Pathogenesis of acute inflammation, Chemical mediators in inflammation, Types of chronic inflammation
- Repairs of wounds in the skin, factors influencing healing of wounds 3 Diseases of Immunity
- Introduction to Tand B cells
- MHC proteins or transplantation antigens
- 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) - 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.
- Types of shock, mechanisms, stages and management
- Biological effects of radiation
- Environmental and nutritional diseases
- Air pollution and smoking-SO2,NO, NO2, and CO
- Protein calorie malnutrition, vitamins, obesity, pathogenesis of starvation.
- Pathophysiology of common diseases
- Parkinsonism
- Schizophrenia
- Depression and mania
- Hypertension,
- Stroke (ischaemic and hemorrhage)
- Angina, CCF, Atherosclerosis, Myocardial infarction
- Diabetes Mellitus
- Peptic ulcer and inflammatory bowel diseases
- Cirrhosis and Alcoholic liver diseases
- Acute and chronic renal failure
- Asthma and chronic obstructive airway diseases

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

2.2 - Pharmaceutical Microbiology

Theory

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

Practical

- Study of apparatus used in experimental microbiology*.
- Sterilisation of glass ware's. Preparation of media and sterilisation.*
- Staining techniques - Simple staining ; Gram's staining ; Negative staining**

- Study of motility characters*.
- Enumeration of micro-organisms (Total and Viable)*
- Study of the methods of isolation of pure culture.*
- Bio chemical testing for the identification of micro*-organisms.
- Cultural sensitivity testing for some micro-organisms.*
- Sterility testing for powders and liquids.*
- Determination of minimum inhibitory concentration.*
- Microbiological assay of antibiotics by cup plate method.*
- Microbiological assay of vitamins by Turbidometric method**
- Determination of RWC.**
- Diagnostic tests for some common diseases, Widal, malarial parasite.**

2.3 - Pharmacognosy and Phytopharmaceuticals

Theory

- Introduction.
- Definition, history and scope of Pharmacognosy.
- Classification of crude drugs.
- Cultivation, collection, processing and storage of crude drugs.
- Detailed method of cultivation of crude drugs.
- Study of cell wall constituents and cell inclusions.
- Microscopical and powder Microscopical study of crude drugs.
- Study of natural pesticides.
- Detailed study of various cell constituents.
- Carbohydrates and related products.
- Detailed study carbohydrates containing drugs.(11 drugs)
- Definition sources, method extraction, chemistry and method of analysis of lipids.
- Detailed study of oils.
- Definition, classification, chemistry and method of analysis of protein.
- Study of plants fibers used in surgical dressings and related products.
- Different methods of adulteration of crude drugs.

Practical

- Introduction of Pharmacognosy laboratory and experiments.
- Study of cell wall constituents and cell inclusions.
- Macro, powder and microscopic study of Datura.
- Macro, powder and microscopic study of Senna.
- Macro, powder and microscopic study of Cassia.cinnamon.
- Macro, powder and microscopic study of Cinchona.
- Macro, powder and microscopic study of Ephedra.
- Macro, powder and microscopic study of Quassia.
- Macro, powder and microscopic study of Clove
- Macro, powder and microscopic study of Fennel.
- Macro, powder and microscopic study of Coriander.
- Macro, powder and microscopic study of Isapgol.
- Macro, powder and microscopic study of Nux vomica.
- Macro, powder and microscopic study of Rauwolfia.

- Macro, powder and microscopic study of Liquorice.
- Macro, powder and microscopic study of Ginger.
- Macro, powder and microscopic study of Podophyllum.
- Determination of Iodine value.
- Determination of Saponification value and unsaponifiable matter.
- Determination of ester value.
- Determination of Acid value.
- Chemical tests for Acacia.
- Chemical tests for Tragacanth.
- Chemical tests for Agar.
- Chemical tests for Starch.
- Chemical tests for Lipids.(castor oil,sesame oil, shark liver oil,bees wax)
- Chemical tests for Gelatin.

2.4 - Pharmacology I

Theory

- General Pharmacology
- Introduction, definitions and scope of pharmacology
- Routes of administration of drugs
- Pharmacokinetics (absorption, distribution, metabolism and excretion)
- Pharmacodynamics
- Factors modifying drug effects
- Drug toxicity - Acute, sub-acute and chronic toxicity.
- Pre-clinical evaluations
- 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.
- Pharmacology of drugs acting on ANS
- Adrenergic and antiadrenergic drugs
- Cholinergic and anticholinergic drugs
- Neuromuscular blockers
- Mydriactics and miotics
- Drugs used in myasthenia gravis
- Drugs used in Parkinsonism
- Pharmacology of drugs acting on cardiovascular system
- Antihypertensives
- Anti-anginal drugs
- Anti-arrhythmic drugs
- Drugs used for therapy of Congestive Heart Failure
- Drugs used for hyperlipidaemias
- Pharmacology of drugs acting on Central Nervous System
- General anesthetics
- Sedatives and hypnotics
- Anticonvulsants
- Analgesic and anti-inflammatory agents
- Psychotropic drugs
- Alcohol and methyl alcohol
- CNS stimulants and cognition enhancers

- Pharmacology of local anaesthetics
- Pharmacology of Drugs acting on Respiratory tract
- Bronchodilators
- Mucolytics
- Expectorants
- Antitussives
- NasalDecongestants
- Pharmacology of Hormones and Hormone antagonists
- Thyroid and Antithyroid drugs
- Insulin, Insulin analogues and oral hypoglycemic agents
- Sex hormones and oral contraceptives
- Oxytocin and other stimulants and relaxants
- Pharmacology of autocoids and their antagonists
- Histamines and Antihistaminics
- 5-Hydroxytryptamine and its antagonists
- Lipid derived autocoids and platelet activating factor

2.5 - Community Pharmacy

Theory

- Definition, scope, of community pharmacy Roles and responsibilities of Community pharmacist
- Community Pharmacy Management
- Selection of site, Space layout, and design
- Staff, Materials-coding, stocking
- Legal requirements
- Maintenance of various registers
- Use of Computers: Business and health care soft wares 3 Prescriptions - parts of prescription, legality & identification of medication related problems like drug interactions.
- Inventory control in community pharmacy Definition, various methods of Inventory Control ABC, VED, EOQ, Lead time, safety stock
- Pharmaceutical care Definition and Principles of Pharmaceutical care.
- Patient counselling Definition, outcomes, various stages, barriers, Strategies to overcome barriers Patient information leaflets-content, design, & layouts, advisory labels
- Patient medication adherence Definition, Factors affecting medication adherence, role of pharmacist in improving the adherence.
- Health screening services Definition, importance, methods for screening Blood pressure/ blood sugar/ lung function and Cholesterol testing
- OTC Medication-Definition, OTC medication list & Counselling
- Health Education WHO Definition of health, and health promotion, care for children, pregnant & breast feeding women, and geriatric patients.
- Commonly occurring Communicable Diseases, causative agents, Clinical presentations and prevention of communicable diseases - Tuberculosis, Hepatitis, Typhoid, Amoebiasis, Malaria, Leprosy, Syphilis, Gonorrhea and AIDS Balance diet, and treatment & prevention of deficiency disorders Family planning - role of pharmacist 11 Responding to symptoms of minor ailments Relevant pathophysiology, common drug therapy to, Pain, GI disturbances (Nausea, Vomiting, Dyspepsia, diarrhea, constipation), Pyrexia, Opthalmic symptoms, worms infestations.
- Essential Drugs concept and Rational Drug Therapy Role of community pharmacist
- Code of ethics for community pharmacists

2.6 - Pharmacotherapeutics I

Theory

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

Practical

- Hospital postings in various departments designed to complement the lectures by providing practical clinical discussion; attending ward rounds; follow up the progress and changes made in drug therapy in allotted patients; case presentation upon discharge.

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