

Syllabus

Module 01 10 Hours

Antibiotics

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

β -Lactam antibiotics

- Penicillin, Cephalosporins, β -Lactamase inhibitors, Monobactams.

Aminoglycosides

- Streptomycin, Neomycin, Kanamycin.

Tetracyclines

- Tetracycline, Oxytetracycline, Chlortetracycline, Minocycline, Doxycycline.

Module 02 10 Hours

Antibiotics

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

Macrolide

- Erythromycin Clarithromycin, Azithromycin.

Miscellaneous

- Chloramphenicol*, Clindamycin.

Pro-drugs

- Basic concepts and application of prodrugs design.

Antimalarials

- Etiology of malaria.

Quinolines

- SAR, Quinine sulphate, Chloroquine, Amodiaquine, Primaquine phosphate, Pamaquine, Quinacrine hydrochloride, Mefloquine.
- Biguanides and dihydro triazines
- Cycloguanil pamoate, Proguanil.

Miscellaneous

- Pyrimethamine, Artesunate, Artemether, Atovaquone.

Module 03 10 Hours

Anti-Tubercular Agents

Synthetic Anti-Tubercular Agents

- Isoniazid, Ethionamide, Ethambutol, Pyrazinamide, Para amino salicylic acid.

Anti-Tubercular Antibiotics

- Rifampicin, Rifabutin, Cycloserine Streptomycin, Capreomycin sulphate.

Urinary Tract Anti-Infective Agents

Quinolones

- SAR of quinolones, Nalidixic Acid, Norfloxacin, Enoxacin, Ciprofloxacin, Ofloxacin, Lomefloxacin, Sparfloxacin, Gatifloxacin, Moxifloxacin.

Miscellaneous

- Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral Agents

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

Module 04

08 Hours

Antifungal Agents

Antifungal Antibiotics

- Amphotericin-B, Nystatin, Natamycin, Griseofulvin.

Synthetic Antifungal Agents

- Clotrimazole, Econazole, Butoconazole, Oxiconazole, Tioconazole, Miconazole, Ketoconazole, Terconazole, Itraconazole, Fluconazole, Naftifine hydrochloride, Tolnaftate.

Anti-Protozoal Agents

- Metronidazole, Tinidazole, Ornidazole, Diloxanide, Iodoquinol, Pentamidine Isethionate, Atovaquone, Eflornithine.

Anthelmintics

- Diethylcarbamazine citrate, Thiabendazole, Mebendazole, Albendazole, Niclosamide, Oxamniquine, Praziquantal, Ivermectin.

Sulphonamides and Sulfones

- Historical development, chemistry, classification and SAR of Sulfonamides: Sulphamethizole, Sulfisoxazole, Sulphamethizine, Sulfacetamide, Sulphapyridine, Sulfamethoxazole, Sulphadiazine, Mefenide acetate, Sulfasalazine.

Folate Reductase Inhibitors

- Trimethoprim*, Cotrimoxazole.

Sulfones

- Dapsone.

Module 05

07 Hours

Introduction to Drug Design

- Various approaches used in drug design.
- Physicochemical parameters used in quantitative structure activity relationship (QSAR) such as partition coefficient, Hammett's electronic parameter, Taft's steric parameter and Hansch analysis.
- Pharmacophore modeling and docking techniques.

Combinatorial Chemistry

- Concept and applications of combinatorial chemistry: solid phase and solution phase synthesis.