



**UNIVERSITY OF LUCKNOW**  
**LUCKNOW**  
**M.Sc. Pharmaceutical Chemistry (Core)**  
**Medicinal Chemistry I**  
**Semester III, Paper II, PH3CO8**

**Unit I**

**1. Drugs acting on ANS**

- a. Adrenergic stimulants: Phenyl ethanolamine derivatives-adrenaline, isoprenaline, salbutamol, ephedrine, and phenylephrine. Imidazole derivatives-naphazoline, xylometazoline and oxymetazoline.
- b. Adrenergic blockers:  $\alpha$  and  $\beta$  adrenoreceptor antagonists-ergot alkaloids, phenoxybenzamine, phentolamine, tolazoline, DCI, propranolol, atenolol, labetalol. Neurone blockers—Bretilium and Xylocholine.

**2. Cholinergic stimulants**

- a. Nicotinic and muscarinic receptors, acetyl choline and analogues, pilocarpine, bethanechol and carbachol.

**3. Cholinergic blockers**

- a. Tertiary and quaternary antimuscarinics, antispasmodic drugs-dicyclomine, glycopyrrolate, antiulcer drugs-pirenzepine, cycloplegic drugs-tropicamide, homatropine

**UNIT II**

**4. Anticholinesterases**

- a. Competitive inhibitors-physostigmine and neostigmine. Non competitive inhibitors: organophosphorus compounds, Nerve gases, Cholinesterase regenerators-2 PAM.
- b. Ganglion blocking agents: mecamlamine and trimethophan

**5. Synthesis of the following drugs**

- |               |               |
|---------------|---------------|
| ○ Bretilium   | ○ Naphazoline |
| ○ Carbachol   | ○ Propranolol |
| ○ Gallamine   | ○ Salbutamol  |
| ○ Mecamlamine | ○ Tolazoline  |

**Unit III**

**6. Drugs acting on CVS**

**a. Cardiotonic drugs**

- i. Cardiac glycosides-their chemistry and stereochemistry,
- ii. Digoxin and digitoxin.

**b. Antiarrhythmic drugs**

- i. Quinidine, disopyramide, lidocaine, phenytoin and procainamide,  $\beta$ -blockers-propranolol.

**c. Calcium channel blockers**



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- i. Verapamil, nifedipine and Neurone blockers-bretilium.

**d. Antihypertensive Drugs**

- i. Peripheral antiadrenergics-prazosin and terazosin.

**e. Centrally acting drugs**

- i. Reserpine, clonidine and methyl dopa.

**f.  $\beta$ -blockers**

- i. Propranolol, atenolol and labetalol.

**g. Calcium channel blockers**

- i. Nifedipine and amlodipine.

**h. ACE inhibitors**

- i. Captopril. Angiotensin receptor blockers-losartan.

**i. Diuretics**

- i. Thiazide diuretics.

**j. Antianginal drugs**

- i. vasodilators-nitrites and nitrates,

**k. Anticoagulants**

- i. Heparin, coumarin derivatives and indane dione derivatives.

**l. Antilipidemic agents**

- i. Atherosclerosis (mention only), Statins-lovastatin, simvastatin, fluvastatin, Fibrates-clofibrate.

**7. Synthesis of the following drugs**

- |                |                |
|----------------|----------------|
| ○ Amlodipine   | ○ Fluvastatin  |
| ○ Captopril    | ○ Procainamide |
| ○ Disopyramide | ○ Verapamil    |

**Unit IV**

**8. Chemotherapy**

**a. Sulphonamides**

- i. sulphanilamide, N-substituted sulphanilamide derivatives, mechanism of action, sulphones-dapsone, dihydrofolate reductase inhibitor trimethoprim and cotrimoxazole.



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**b. Antitubercular agents**

- i. First line drugs-isoniazid, rifampicin, pyrazinamide, ethambutol, and streptomycin.
- ii. Second line drugs-ethionamide, paraaminosalicylic acid and fluoroquinolones.

**c. Antifungal agents**

- i. Antibiotics- amphotericinB, griseofulvin and nystatin.
- ii. Azole derivatives- ketoconazole, terconazole, fluconazole and clotrimazole.
- iii. Pyrimidine derivatives- 5 Flucytosine.

**d. Antiviral drugs**

- i. Amantidine, interferon and ribavirin.
- ii. Anti HIV agentszidovudine, and abacavir.
- iii. Anti herpes simplex agents-brivudine, vidarabin and acyclovir.
- iv. Anti-influeza agents-oseltamivir(tamiflu).
- v. Antiprotozoal agents: Amoebicides-metranidazole and tinidazole.

**e. Antimalarials**

- i. Chloroquine, primaquine, mefloquine, quinacrine and proguanil.

**f. Anthelmintics**

- i. Piperazines and benzimidazoles. .

**9. Synthesis of the following drugs**

- |                   |                     |
|-------------------|---------------------|
| ○ Acyclovir       | ○ Griseofulvin      |
| ○ Ampicillin      | ○ Mebendazole       |
| ○ Cephalexin      | ○ Metranidazole     |
| ○ Chloramphenicol | ○ Primaquine        |
| ○ Clotrimazole    | ○ Sulphamethoxazole |
| ○ Dapsone         | ○ Trimethoprim      |
| ○ Ethambutol      |                     |