



## DEPARTMENT OF PHARMACY

Course: B. Pharmacy

LESSONPLAN

Faculty Name: Dr. Minkal Tuteja

Class: B. Pharmacy –4<sup>th</sup> semester

Subject: Medicinal Chemistry –II

Subject Code: BP402T

**Scope of the Subject:** This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

**Course outcome:** Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacological activity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class of drugs
4. write the chemical synthesis of some drugs.

- Number of Lectures: 45
- Each lecture: 01 hour

Lecture No.	Particular	Remark/Date
<b>Unit 1</b>		
1.	Introduction to Medicinal Chemistry	
2.	History and development of medicinal chemistry	
3.	Physicochemical properties in relation to biological action	
4.	Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism	
5.	Drug metabolism	
6.	Drug metabolism principles- Phase I and Phase II.	
7.	Factors affecting drug metabolism including stereo chemical aspects.	
<b>UNIT -II</b>		
8.	<b>Drugs acting on Autonomic Nervous System</b>	
9.	Adrenergic Neurotransmitters: Biosynthesis and catabolism of catecholamine.	
10.	Adrenergic receptors (Alpha & Beta) and their distribution	
11.	Sympathomimetic agents: SAR of Sympathomimetic agents	
12.	Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine	

13.	Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.	
14.	Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.	
15.	<b>Adrenergic Antagonists:</b>	
16.	Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.	
17.	Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.	
<b>UNIT-III</b>		
18.	Cholinergic neurotransmitters:	
19.	Biosynthesis and catabolism of acetylcholine. Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.	
20.	Parasympathomimetic agents: SAR of Parasympathomimetic agents	
21.	Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.	
22.	Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible): Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.	
23.	Cholinesterase reactivator: Pralidoxime chloride.	
24.	Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.	
<b>UNIT IV</b>		
25.	<b>Drugs acting on Central Nervous System</b>	
26.	Sedatives and Hypnotics: Benzodiazepines: SAR of Benzodiazepines, Chlordiazepoxide, Diazepam*, Oxazepam, Chlorazepate, Lorazepam, Alprazolam, Zolpidem Barbiturates: SAR of barbiturates, Barbitol*, Phenobarbital, Mephobarbital, Amobarbital, Butobarbital, Pentobarbital, Secobarbital Miscellaneous: Amides & imides: Glutethimide. Alcohol & their carbamate derivatives: Meprobamate, Ethchlorvynol. Aldehyde & their derivatives: Triclofos sodium, Paraldehyde	
27.	Antipsychotics Phenothiazines: SAR of Phenothiazines - Promazine hydrochloride, Chlorpromazine hydrochloride*, Triflupromazine, Thioridazine hydrochloride, Piperacetazine hydrochloride, Prochlorperazine maleate, Trifluoperazine hydrochloride. Ring Analogues of Phenothiazines: Chlorprothixene, Thiothixene, Loxapine succinate, Clozapine.	

	Fluro buterophenones: Haloperidol, Droperidol, Risperidone. Beta amino ketones: Molindone hydrochloride. Benzamides: Sulpieride	
28.	Anticonvulsants: SAR of Anticonvulsants, mechanism of anticonvulsant action	
29.	Barbiturates: Phenobarbitone, Methabarbitol. Hydantoins: Phenytoin*, Mephenytoin, Ethotoin Oxazolidine diones: Trimethadione, Paramethadione Succinimides: Phensuximide, Methsuximide, Ethosuximide* Urea and monoacylureas: Phenacemide, Carbamazepine*	
30.	Benzodiazepines: Clonazepam Miscellaneous: Primidone, Valproic acid, Gabapentin, Felbamate	
<b>UNIT V</b>		
31.	<b>Drugs acting on Central Nervous System</b>	
32.	General anesthetics: Inhalation anesthetics: Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane.	
33.	Ultra short acting barbiturates: Methohexital sodium, Thiamylal sodium, Thiopental sodium. Dissociative anesthetics: Ketamine hydrochloride.	
34.	Narcotic and non-narcotic analgesics	
35.	Diphenoxylate hydrochloride, Loperamide hydrochloride, Fentanyl citrate*, Methadone hydrochloride*, Propoxyphene hydrochloride, Pentazocine, Levorphanol tartarate. Narcotic antagonists: Nalorphine hydrochloride, Levallorphan tartarate, Naloxone hydrochloride.	
36.	Anti-inflammatory agents: Sodium salicylate, Aspirin, Mefenamic acid*, Meclofenamate, Indomethacin, Sulindac, Tolmetin, Zomepriac, Diclofenac, Ketorolac, Ibuprofen*, Naproxen, Piroxicam, Phenacetin, Acetaminophen, Antipyrine, Phenylbutazone.	
37.	Morphine and related drugs: SAR of Morphine analogues, Morphine sulphate, Codeine, Meperidine hydrochloride, Anilerdine hydrochloride,	
<b>Revision</b>		
38.	Revision of Unit 1 with previous question paper	
39.	Revision of Unit II with previous question papers	
40.	Revision of Unit III with previous question papers	
41.	Revision of Unit IV with previous question papers	
42.	Revision of Unit V with previous question papers	

Teacher in-charge

HOD

Principal