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Review Article

**A SHORT PHARMACOLOGICAL REVIEW ON SOME  
IMPORTANT DRUGS****Mr. Abhishek Barahate<sup>1\*</sup>, Dr. Nishant Bobade<sup>2</sup>, Varsha Rathod<sup>3</sup>, Vedashri Umap<sup>4</sup>,  
Sampada Shelke<sup>5</sup>, Tanushri Bawane<sup>6</sup>**<sup>1,3,4,5,6</sup>Vidyabharati College of Pharmacy, C.k Naidu Camp, Amravati, India<sup>2</sup>Assitant Professor, Vidyabharati College of Pharmacy, C.k Naidu Camp, Amravati, India**Abstract:**

*By wandering through various previous paper of GPAT (graduate pharmacy aptitude test), DI(Drug inspector), Drug commissioner I have gathered a such fruitful information about pharmacology of some important drug. It has covered various category of drug as follow:-*

- 1) Sympathomimetic
- 2) Sympatholytic
- 3) Parasympathomimetic
- 4) Parasympatholytic
- 5) Antitubercular
- 6) Anticancer
- 7) Antileprotic
- 8) Antimalarial
- 9) Anticancer

*Each and every drug contain following information:*

1. category.
2. Mechanism of action.
3. Uses.
4. Major adverse effect.
5. Drug interaction.
6. Chemical structure.
7. Special Note

*Key Word – Antitubercular, Anticancer, Drug Interaction, Anaphylaxis, Sympathomimetic, Sympatholytic*

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**INTRODUCTION:**

**Pharmacology** – It is a branch of science which deals with pharmacokinetic and pharmacodynamics.

**Pharmacokinetic** - It is a branch of pharmacology which deals with what body does to the drug? It covers Absorption, Distribution, Metabolism, Elimination (ADME). It involves parameters like plasma half-life, volume of distribution, Bioavailability, shelf life, Kinetic of elimination, Kinetic of absorption, clearance rate etc.

**Pharmacodynamic** – It is a branch of pharmacology which deals with what the Drug does to the Body? It involves mechanism of drug action, Adverse effect, Side effect, Pharmacodynamic drug

interaction etc. It involves Parameters like loading dose, maintenance dose, Steady state plasma concentration, Therapeutic index, Therapeutic range etc.

Some important definitions:-

**1) Mechanism of action-** It is the specific biochemical interaction through which a drug substance produces its pharmacological response.

**2) Adverse effect -** Undesired Pharmacological action which occurs at higher doses than normal dose.

**3) Category -** The class to which drug belongs.

Sr. No	Name Of Drug	Category	Mechanism Of Action	Use	Major Adverse Effect	Special Note
1	Promethazine	First Generation Highly Sedative H1Antihistaminic	Competitive Antagonist At H1 Receptor	1)Antiemetic 2)Drug Induced Parkinsonism	Anticholinergic Effect (Blurring Of Vision ,Urinary Retention)	-----
2	Terfenadine	Second Generation H1antihistaminic	H1 Receptor Blocker(Competitive Antagonist)	Allergy And Inflammation	Q-T Interval Prolongation Or Torsades D Banned In India)	Fexofenadine The Active Metabolite Of The Terfenadine Causes No QT Interval Prolongation
3	Adrenaline	Sympathomimetic	Acts On Alpha1,Alpha2,Beta1,Beta2 And Weak Beta3 Action	Anaphylactic Shock	-----	Adrenaline Causes Mydriasis Due To Contraction Of Radial Muscle Of Iris
4	Dobutamine	Sympathomimetic	Acts On Beta Receptor And Have Weak Alpha Action	Used As An Inotropic Agent In Pump Failure Accompanying The Myocardial Infarction , Cardiac Surgery , And For Short Term Treatment Of Severe Congestive Heart Failure	-----	1) It Is An Exogenous Catecholamine 2)It Prominent Action Is To Increase Force Of Cardiac Contraction And cardiacOutput Without Significant Change In B.P.
5	Ephedrine	Sympathomimetic	Agonist At Alpha 1,Alpha2,Beta1,Beta2 Receptor	1)Vasoconstriction 2)Mydriasis 3)Bronchodilation	---	1)It Has Mixed Action(Alpha Along With Beta Agonistic Action)
6	Isoprenaline	Sympathomimetic	Beta 1,Beta 2,Beta3 Receptor Agonist	Cardiac Agent(Tachycardia)	---	----
7	Salbutamol	Sympathomimetic	Selective Agonist At Beta 2 Receptor	Bronchodilator	---	1) Shortest Acting Sympathomimetic
8	Ritodrine	Sympathomimetic	Beta 2 Agonist	Uterine Relaxant	---	---
9	Amphetamine	Sympathomimetic	It Exchange The NE From The Vesicle(Membrane NA Pool Exchange)	1)CNS Stimulant 2)DOPE Test For Athlete	----	1) Amphetamine Toxicity- Make Urine Acidic By NH4CL Fenfluramine Is Amphetamine Analogue Used In Anorexia Without Stimulation

10	Phenylephrine	Sympathomimetic	Selective Alpha 1 Agonist	1) Nasal Decongestant Use As Mydriatic When Cyclopegia Is Not Required	-----	1. ----
11	Dopamine	Endogenous Catecholamine	D1 And D2 Agonist With Negligible Beta 1 Action	Used In 1) Cardiogenic And Septic Shock 2) Acute Heart Failure Where Increase In B.P. And Urine Outflow	-----	-----
12	Isoxsuprine	Sympathomimetic	Agonist At Beta 2 Receptor	Used As Uterine Relaxant For Threatened Abortion And Dysmenorrhea	-----	Long Acting Beta2 Receptor Agonist
13	Phentermine	Anorectic Agent (Sympathomimetic)	Phenethylamine Inhibits NA (Noradrenaline) Reuptake And Increases The NA In Brain Inhibits the feeding Center (Hypothalamus) Loss of appetite	Used In Obesity	-----	-----
14	Xylometazoline	Sympathomimetic	Selective Alpha 1 Agonist	Nasal Decongestant	-----	-----
15	Phenoxybenzamine	Sympatholytic	Non Selective Alpha Blocker	1) Used In Treatment Of Hypertension Associated With Pheochromocytoma	-----	Irreversible And Noncompetitive Inhibitor Of The Alpha Receptor
16	Phentolamine	Sympatholytic	Non Selective Alpha 1 And Alpha 2 Blocker	Used In Erectile Dysfunction	-----	Used In Cheese Reaction

17	Prazosin	Sympatholytic	Selective Alpha 1 Blocker	Used In Benign Prostatic Hyperplasia(BPH)	-----	Drug Of Choice For Hypertension Associated With The Dyslipidemia And BPH
18	Yohimbine	Sympatholytic	Selective Alpha 2 Blocker	-----	-----	1)It Is An Indole Alkaloid
19	Pindolol	Sympatholytic	Non Selective Beta Blocker	-----	-----	1)It Is Beta Blocker With Intrinsic Sympathomimetic Property 2)It Is Beta Blocker With Membrane Stabilizing Property 3)Maximum Bioavailability
20	Atenolol	Sympatholytic	Cardioselective Beta 2 Blocker	1) Used In Tachycardia	1) Contraindicated In The Renal Failure	-----
21	Acebutolol	Sympatholytic	Cardioselective Beta 2 Blocker	1)Used In Tachycardia	-----	1) Beta Blocker With Membrane Stabilizing Property Beta Blocker With Intrinsic Sympathomimetic Property 3)Highly Water Soluble
22	Esmolol	Sympatholytic	Cardioselective Beta 2 Blocker	----	----	1)Shortest Acting Beta Blocker
23	Bethacholine	Parasympathomimetic	M3 Receptor Agonist	1)Used In Atonic Bladder	-----	-----
24	Methacholine	Parasympathomimetic	Selective M2 Receptor Agonist	1)Used In Tachycardia	-----	1)Directly Acting Choline Ester 2)Metabolized By ACHE(Acetyl Choline Esterase)
25	Pilocarpine	Parasympathomimetic (Directly Acting Choline Ester)	Agonist At M3 Receptor	1) Used In Angle Closure Glaucoma	-----	1)Occusert- It Is An Sustained Type Of Drug Delivery System 1)It Is An Imidazole Alkaloid Obtained From Pilocarpus Jaborandi

26	Muscari ne	Parasympathomim etic	Musacrinic Receptor Agonist	---	-----	1)It Is Obtained From Amantia Muscaria 2)Antidote Is Thiotic Acid
27	Physosti gmine	Anticholinesterase Agent	Reversibly Inhibit The Anticholinesterase Enzyme	1) Used As Miotic Used In Atropine Posioning	-----	1)It Is An Alkaloid Obtained From Physostigma Veneosum 2)Ruberserine Is An Metabolic Product Of Physostigmine. 3)It Contain Quaternary Ammonium Group Hence It Is Lipid Soluble
28	Neostig minne	Anticholinesterase Agent	Reversibly Inhibit The Enzyme Anticholinesterase	1)Used In Myasthenia Gravis 2)Use In Curare Poisoning	-----	1)It Contain The Quaternary Ammonium Group Hence Water Soluble.
29	Edropho nium	Anticholinesterase Agent	Reversibly Inhibit The Enzyme Anticholinesterase	1)Used As Diagnostic Agent In Myastheni a Gravis.	-----	1) Shortest Acting Anticholinesteras e Agent. It Contain Quaternary Ammonium Group Hence Water Soluble
30	Tacrine	Anticholinesterase Agent	Reversibly Inhibit The Enzyme Anticholinesterase	1)Previously Drug Of Choice For Alzheimer's Disease But Banned Due To Its Hepatotoxicity	1)Hepatotoxicity	1)It Contain Tertiary AmineGroup Hence Lipid Soluble. 2)It Attach To The Anionic Site Of The Anticholinesterase Enzyme
31	Donepez il	Anticholineesteras eAgent	Reversibly Inhibit The Enzyme Anticholinesterase	1)Drug Of Choice For The Alzheimer' s Disease	-----	1)It Contain The Tertiary Amine Group Hence Lipid Soluble 2)Long Acting Anticholinesterase Agent
32	Nitrous Oxide(L aughing Gas)	Inhalational Gas General Anesthetic	Act By Enhancing The Activity Of Inhibitory Neurotransmitter And Blocking The Activity Of Excitatory Neurotransmitter	1)General Anesthetic 2)Excellent Analgesic 3) Dental Analgesic	Causes Hypoxia	1)Non Irritating And Non Inflammable

33	Haloethane	Inhalational Volatile Oil Liquid General Anesthetic	Act By Enhancing The Activity Of The Inhibitory Neurotransmitter And Blocking The Excitatory Neurotransmitter	1)Potent Anesthetic 2)Causes Bronchodilation So Preferred In Asthma	1)Hepatotoxic 2)Respiratory Depression	1)Non- Irritating Non-Inflammable
34	Ether	Inhalational Volatile Oil Liquid Anesthetic	Blocks Nm Receptor	1)potent Analgesic	1)Irritant May Induce Cough	1) Irritating And Inflammable. No Hepatotoxicity
35	Thiopentone	Parenteral Fastest Acting Inducing Agent General Anesthetic	Act By Enhancing The Activity Of The Inhibitory Neurotransmitter	1)General Anesthetic	1) Laryngospasm May Occur	1)Ultra Short Acting Thiobarbiturate 2)Highly Lipid Soluble Hence Has Rapid Onset Of Action
36	Ketamine	Dissociative Anesthetic	It Act By Blocking The NMDA Receptor	Intravenous General Anesthetic Drug Of Choice For Bronchial Asthma Patient	1)Can Be Dangerous In Case Of Hypertension, CVS, CHF	1)Dissociative Anesthetic
37	Disulfiram	Psychiatry Agent	Act By Inhibiting The Enzyme Aldehyde Dehydrogenase	1)Gives Relief From Alcohol	----	1)Metabolism Of Alcohol Follow Zero Order Kinetic
38	Fomepizole	Psychiatry Agent	Act By Inhibiting The Enzyme The Alcohol Dehydrogenase	1) Used In Methanol Poisoning 2)used In Ethylene Glycol Poisoning	-----	-----
39	Thiopentone	Ultra Short Acting Thiobarbiturate	GABA Mimetic Action---- Increases Level Of Inhibitory Neurotransmitter( Chloride)	1)Sedative And Hypnotic	1)Hangover Is Common	1) Barbiturate Induces The CYP3A4 Enzyme And Increases The Metabolism Of Of The Drugs Like Warfarin, Griseofulvin
40	Diazepam	Benzodiazepine	GABA Facilitatory Action	1)Sedative And Hypnotic	1)Floppy Baby Syndrome --- New Born Baby	1)Flumazenil Is The Specific Antidote For Benzodiazepine
41	Sodium Nitroprusside	Arteriodilator And Venodilator	Release Nitrous Oxide And Causes Smooth Muscle Relaxation	1)Hypertension. 2)CHF	1)Cyanide Poisoning 2)Lactic Acidosis	-----
42	Kallidin	Plasma Kinin	Releases The EDRF (Endothelial Relaxing Factor) Which Causes The NO <sub>2</sub> Release	1)Hypertension	Bronchoconstriction	-----

43	Digoxin	Cardiac Glycoside	Act By Inhibiting The $Na^+ K^+$ Atpase Pump	1)Atrial Flutter. 2)Atrial Fibrillation 3)Congestive Heart Failure(CHF) 4)Paraoxysmal Supraventricular Tachycardia(Psvt)	1)Gynacomastia	1) Only Drug With +Ve Inotropic And Ve Chromotropic Effect Means Increases The Force Of Contraction And Decreases Heart Rate. Hypokalemia And Hypomagnesia And Hypercalcemia Enhances Digoxin Toxicity
44	Dipyridamol	Coronary Dialator	Prevent The UptakeAnd Inhibit The Degradation Of The Adenosine	1)Angina Pectoris.	----	1. ----
45	Ranolazine	Antianginal	Act By Inhibiting The $Na^+$ Current Which Indirectly Facilitate The Indirect Entry Of Calcium Through $Na^+/Ca^+$ Exchanger	1)First Line Agent For Chronic Angina	----	1) Do Not HaveAny Effect On The Heart Rate And Blood Pressure
46	Acetazolamide	Weak Or Adjuvant Diuretic	Inhibit The Luminal Carbonic Anhydrase Enzyme	1)Glaucoma 2)To Make The Urine Alkaline In Case Of Acidic Drug Poisoning	-----	-----
47	Mannitol	Osmotic Diuretic	Osmotic Diuretic Withdraw Water From The Tissue By Osmotic Action And Thus Result In IncreaseExcretion Of Water And Electrolyte	1) Drug Of Choice For Cerebral Edema. Accute Congestive Glaucoma 3)Prevention Of Cisplatin Induced Toxicity	-----	-----
48	Furosemide	Loop Diuretic	Inhibit The $Na^+K^+2Cl^-$ Transport Present In The Ascending Loop Of Henle	1)Used As Diuretic	1)Hypokalemia 2)Hypomagnesemia 3)Hypocalcemia 4)Hyperglycemia 4)Hyperuricemia 5)Hyperlipidemia	1)MaximumSodium Excretion Activity
49	Hydrochlorothiazide	Thiazide Like Diuretic	Inhibit $Na^+Cl^-$ Channel	Drug Of Choice ForEssential Hypertension	1)Impotency 2)Hypercalcemia	-----



50	Chlorthiazide	Thiazide Like Diuretic	Inhibit Na <sup>+</sup> -Cl <sup>-</sup> (Sodium Chloride) Transport Channel Present In The Early Distal Convulated Tubule	1)Used In Volume Dependent Hypertension	1)PulmonaryEdema	1)It Produces Hypokalemia , Alkalosis
51	Spirolactone	Potassium Sparing Diuretic	Spirolactone Competitively Inhibit The Aldosterone At The Receptor In Distal Convulated Tubule	1)Used Along With Thiazide Or Loop Diuretic To Compensate Potassium Loss	1)Hyperkalemia 2)Impotence 3)Hirsutism	1) Canrenone IsThe Active Metabolite Of Spirolactone
52	Amiloride	Directly Acting Renal Epithelial Sodium Channel Blocker	1)It Directly Inhibit Or Block The Sodium Channel In Luminal Membrane Of Cell In The Dct.	1)DOC For The Lithium Induced Diabetes	-----	1) Increase Sodium Excretion And Retain Potassium
53	Quinidine	Membrane Stabilizing Agent	Sodium Channel Blocker Along With Potassium Blocker	1) Used As An Antiarrhythmic Anticholinergic Action	1) Causes Torsade De Pointes	-----
54	Mexilitine	Class 1b - Antiarrhythmic Agent	Block Sodium Channel In Inactivated State And Potassium Channel Opening Property	1)Used In Ventricular Arrhythmias	-----	1) Shortens The APD(Action Potential Duration)
55	Flecainide	Class 1c--- Antiarrhythmic Action	1)Mainly Block The Sodium Channel And Has Negligible Effect On Potassium Channel	1) Used As AntiarrhythmicAgent	-----	1)Marked Phase0 Depolarization
56	Tolvaptan	Vasopressin Receptor Antagonist	Is Known To Block The V2(Vasopressin 2 Receptor) Receptor	1) Used In SIADH(Syndrome Of Inappropriate ADH Secretion) Used In Advanced CHF	-----	1)It Is OrallyActive Nonpeptide Vasopressin Antagonist
57	Nitrates	Venodialator	It Releases NO(Nitrous Oxide) And It Causes Increased Cgmp(Cyclic Gaunosine Monophosphate) And Causes	1)CHF(Congestive Heart Failure) 2)Angina Pectoris 3)Myocardial Infarction	----	1) Glyceryl Trinitrate Is The Fastest ActingDrug(Life SavingDrug). 2) Sublingual Nitroglycerin IsThe Drug Of Choice For TheStable And Prinzmetal Angina.

			Vasodialation			Sublingual Nitroglycerin Is Used In The Pain Associated With The Myocardial Infarction. 4)NitroglycerinIs Used For Nocturnal Angina. 5)Pentaerythryl Tetranitrate Is The Longest Acting Nitrate. 6)Decreases BothPreload And Afterload
58	Inamrinone	PDE3(Phosphodiesterase 3) Inhibitor	It Causes Increased Cyclic Adenosine Monophosphate(Camp) And Causes Vasodialation	1) Used In CHF	-----	1) It Is Also Called Inodilator. 2)Decreases Preload And Afterload And Have Positive Inotropic Effect
59	Sulfadiazine	Sulfonamide	It Is Known To Inhibit The Enzyme Folate Synthetase And Prevent The Formation Of The Folic Acid And Hence Prevent The Dna And RNA Formation And Killing Of Bacteria	1) Preferred For Meningitis	1)Steven Johnson Syndrome	1)It Is ShortestActing Agent Sulfonamide
60	Sulfacetamide	Sulfonamide	Known To InhibitThe Enzyme Folate SynthetaseAnd Hence Preventing The DNA And RNA Formation And Killing Of Bacteria	1)Used In The Treatment Of Ocular Infection	1) Steven Johnson Syndrome Kernicterus 3)Phototoxicity	-----
61	Silver Sulfadiazine	Sulfonamide	Known To InhibitThe Enzyme Folate SynthetaseAnd Prevent The Formation Of DNA And RNA And Killing Of Microbe	Used In Burn Patient	1)Steven Johnson Syndrome 2)Kernicterus 3)Accute Hemolysis In Patient With G6PD Deficiency	1)Silver Sulfadiazine Is Topical Sulfonamide. 2) Used As 1 Percent Cream.

62	Cotrimoxazole	Antibacterial(Bactericidal)	It Is Known To Inhibit The Enzyme Folate Reductase And Prevention Of Tetrahydrofolate Acid Formation And Prevent Formation Of DNA And RNA And Killing of microbes.	1) In Urinary Tract Infection(UTI) 2)Typhoid Fever	1)Megaloblastic Anemia(FOLATE DEFICIENCY) Bone Marrow Depression 3)Contraindicated During Pregnancy	1)Cotrimoxazole Is The Fixed Combination Of Sulfamethoxazole And Trimethoprim In Ratio Of 5:1 2)Individual They Are Bacteriostatic But When Combine Bacteriocidal. 3)Cotrimoxazole Is Ineffective In Treatment Of Respiratory Tract Infection
63	Tolbutamide	Hypoglycaemic--Sulfonylurea(1st Generation)	Block The K <sup>+</sup> (Potassium Atp Channel) And Hence Increases The Potassium Level Inside The Cell Causing Increase Level Of Calcium And Causing Insulin Release	Used As Hypoglycaemic Agent	1)Weight Gain. 2)Teratogenic.	1)Shortest Acting Sulfonyl Urea

**CONCLUSION:**

By going through above all matter I have come to conclusion that the following classes of drug like anticancer, antitubercular, sympathomimetic, sympatholytic, antifungal, Parasympathomimetic, parasympatholytic, antibiotics, Nonsteroidal anti-inflammatory drug (NSAID'S) are the major classes of drug which have been mainly asked not only in competitive exam but this are also important in day to day life.

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