Parasympathomimetics

Direct Acting

1- Acetylcholine **(M & N)**
2- Carbachol **(M & N)**
3- **Metha**choline (M)
4- **Betha**necol (M)
5- Pilocarpine (M)

Indirect Acting (Anti-cholinesterases)

Reversible

1- Physo**stigmine** (eserine)
2- Neo**stigmine**
3- Edrophonium

Irreversible

1- Echothiopate
2- Isoflurophate
3- Parathione

Parasympatholytics

1- Atropine
2- Eucatropine
3- **H**omatropine
4- **H**yoscine
5- Scoplamine
6- Tropicamide
7- Ipratropium (bronchial asthma)
8- Cyclopentolate

Ganglion blockers

Nicotinic anatgoinsts on both Symp. & Parasymp.

9- Nicotine & Lobeline **(large dose)**
10- **Mecamylamine**
11- **Chlorisondamine**
12- Hexamethonium
13- Trimthaphan
14- TetraAthylAmmonium chloride

Sympathomimetics

Catecholamine

α & β Agonists	β1,β2 non-selective Agonists
1- Epinephrine	1- **Iso**prenaline
α & β1 only Agonists	2- **Iso**proterenol
2-Nore-epinephrine	
Others	**β2 Agonists**
3-Dopamine.(α_1 - $\beta_{1,2}$ - $D_{1,2}$)	**Short acting:**
4-Dobutamine (α_1 - $\beta_{1,2}$)	1- Sal**but**amol
5- Methoxamine (α_1)	2- Al**but**erol
	3- Ter**but**aline
	4- Hexoprenaline
	5- Feno**terol**
	6- Rimi**terol**
	7- pirbuterol.
	Long acting:
	1- Salme**terol**
	2- Formo**terol**

Non-Catecholamine

1- **Phenylephrine** (α_1)
2- **Metaproterenol** (β_2)
3- Ephedrine (α_1 - $\beta_{1,2(bronchus)}$ - CNS stimulant)
4- Orciprenaline (β_2)
5- Amphetamine (α_1 - β_1 - CNS stimulant)

Sympatholytics

α - Blockers

Non-selective blockers	selective competitive blockers	
	α1- blockers	α2 - blockers
Phenoxybenzamine Phentolamine	Prazosin Terazosin Tamsulosin ..... any drug zosin	Yohimbine

β - Blockers

Non-selective blockers	selective competitive blockers		
	β1 - blockers	β2 - blockers	Antagonist with partial agonist
Propranolol Timolol nadolo	Acebutolol Atenolol Metoprolol Esmolol	Butxamine	Pindolol Acebutolol

Antagonist of both α & β

Labetalol - Carvedilol

Histamine

Agonist

Histamine

Antagonists

H_1	H_2
Chlorpheniramine Diphenhydramine Loratidine **Mepyramine** **Pheneramine maleate** **Antazoline**	Cime**tidine** Rani**tidine** Famo**tidine** Niza**tidine**

Serotonin 5-HT_2

Agonist	Agonist 5-HT_1
Serotonin	**Buspirone** → anxiolytic **Sumatriptan** → in migrane

5-HT_2 Antagonist	5-HT_3 Antagonist
Cyproheptadine Methysergide Ketanserin	**Ondan**setrone "anti-emetic action"

Angiotensin II

Agonist	Antagonist
Angiotensin	**Saralasin**

Vasopressin

Agonist	Antagonist
Vasopressin	----------

Anti-Arrhythmics

Quinidine - Verapamil - Disopyramide

Slow Ca++ channels blockers

Verapamil - Diltiazem - **Nife**dipine - **Nitren**dipine

General anesthetics

Halothane - Chloroform

Surface anesthetics

Cocaine

Heart

Direct myocardial depressants	Direct Myocardial Stimulants
1- Anti-Arrhythmic drugs **2- Anti-Histaminics(H1)** **3- General anesthetics** **4- Emetine Hydrochoride**	**1- Cardiac Glycosides .** **2- Phosphodistrase inhibitors (Amrinone)** **3- Xanthine (Aminophylline).** **4- Caffeine.**

Blood Vessels

Direct Hypotensive effect on vascular smooth muscles (Direct vasodilators)

1- **Direct Veno-dilators → Nitrites - Nitrates**
2- **Direct arterio-dilators → Hydralazine - Minoxidil**
3- **Mixed-dilators → Sodium Nitroprusside**
4- **Slow Ca++ channels blockers**

Intestine

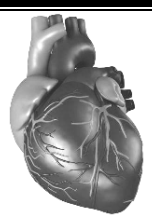
Direct Spasmolytic

1- **Papaverine**
2- **Volatile oils e.g. Peppermint**
3- **Nitrites & nitrates**
4- **Aminophylline**

Action of drugs on Isolated Toad's Heart

Inhibitory drugs on the heart

1- M2
2- Ganglion stimulant **(Nn).**
3- Direct myocardial depressants



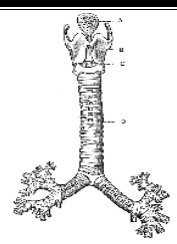
Stimulatory drugs on the heart

1- β1
2- H2
3- Direct myocardial stimulants

Action of drugs on Isolated guinea pig trachea

Bronchoconstrictors

1- M3
2- H1



Dose response curve of Ach on trachea.

Bronchodilators

β2

Effect of drugs on arterial blood pressure of anaesthetized cat

Hypertensive drugs

1- Ganglion stimulant **(Nn)** as NSD & NLD
2- Both **α** & **β** agonists
3- **α1** agonist (without effect on β_2) as:
Noradrenaline , phenylphrine, methoxamine, amphetamine, ephedrine.
4- Angiotensin II
5- Vasopressin

Hypotensive drugs

7- Parasympathomimetic with **M_3** action only.
8- Parasympathomimetic with both **M_3** & **N** actions.
9- **β2** agonist.
10- Histamine **H_1** mainly , **H_2**
11- Direct vasodilators

Action of drugs on Isolated rabbit's intestine

Stimulant

1- Ganglion stimulant **(Nn)** as NSD & LSD
2- **M_3**
3- **H_1**
4- 5-HT_2
5- Angiotensin II
6- Vasopressin

Inhibitory

1- Sympathomimetic

1- **α** only
2- **β** only
3- Both **α** & **β** agonists

2- Direct spasmolytics

See above

N.B.

NSD → stimulation of nicotinic receptors in parasympathetic ganglia→ inhibition of the heart

NLD → initial stimulation followed by blocking of the parasympathetic ganglia (depolarizing blocker) → initial inhibition of the heart then cardiac contraction become normal.

- **NSD** is added to test the block of the **nicotinic** receptors in the ganglia .. if the block is complete, NSD → has no effect.
- **Ach** is added to test the block of the **M** receptors produced by atropine .. If the block is complete, Ach → has not effect.
- **Adrenaline** is added to test the block of **β** receptors produced by blockers .. if block is complete, adrenaline → has no effect.