

### Introduction

**Adrenergic drugs** release acetylcholine at the post synaptic level. Only post ganglionic sympathetic nerves are adrenergic as they use epinephrine as neuron transmitters.

**Function** Norepinephrine is a neurotransmitter of adrenergic synapse, coming from tyrosine → DOPA → Dopamine, stored in vesicles until it needs to be released, when impulses from CNS send the signals. They use exocytosis so the norepinephrine gets into the synaptic cleft. In synaptic cleft, norepinephrine needs to act on post synaptic receptors.

Norepinephrine is released from the presynaptic membrane

- 1) Most of it is taken back w/out any changes to be reused (uptake 1),
- 2) Taken by factors cells AKA non neuronal uptake (uptake 2)
- 3) Diffuse
- 4) Degrade (by enzyme present in the synaptic left, minor).

### Introduction (cont)

Norepinephrine can act on presynaptic receptors, regulate release of Norepinephrine from sympathetic nerve endings (AKA alpha 2 receptors), regulates -ive feedback mechanism (uptake 1)

### Drugs - based on potency

**α-adrenoc-eptors** Norepinephrine → epinephrine → isoprenaline

**β-adrenoc-eptors** Isoprenaline → epinephrine → norepinephrine

**α,β adreno-ceptors** Epinephrine + norepinephrine

### Groups of drugs

#### Subtypes Mechanism of action

**α1 adreno-ceptors** **Postsynaptic** - mediate effect on sympathetic nerve system (smooth muscle tissues + organs + blood vessels))

**α2 adreno-ceptors** **Presynaptic** - out of synapse (mediate effects on catecholamines released from adrenal medulla)

**β1 adreno-ceptors** **Postsynaptic** - mediate effect on sympathetic nerve system (heart)

**β2 adreno-ceptors** **Presynaptic** - out of synapse (mediate effects of catecholamines circulating in blood leads to vasodilation)

### Adreno-positive drugs

**α, β-adre-nom-imetics** (natural - used intravenously) **Epinephrine, norepinephrine**

**α-adre-nom-imetics** (selective) **α1-adrenomimetics = phenylephrine** (increases BP locally + effective orally)  
**α2-adrenomimetics = Naphazoline, clonidine** (decreases BP, antihypertensive drug)

**β-adre-nom-imetics** (selective) **β1,β2-adrenomimetics = isoprenaline**  
**β1-adrenomimetics = dobutamine** (if patient doesn't have hypoxia or ischemic disease)  
**β2-adrenomimetics = salbutamol** (short acting drug), **phenoterol, salmeterol** (slow/-prolonged acting drug)

**Sympat-hom-imetics** (indirect binding on receptors) **Ephedrine** (acts on sympathetic endings, stimulates release of norepinephrine, indirectly produces effects on post synaptic receptors)

C

By FCGLITCHES

[cheatography.com/fcglitches/](http://cheatography.com/fcglitches/)

Published 23rd August, 2023.

Last updated 23rd August, 2023.

Page 1 of 2.

Sponsored by [CrosswordCheats.com](http://CrosswordCheats.com)

Learn to solve cryptic crosswords!

<http://crosswordcheats.com>

### Adreno-negative drugs

**Adrenoblockers/-adrenoceptors antagonists** (direct binding on receptors)

**α, β-adrenoblockers** (natural) - **Labetalol**

**α-adrenoblockers** - **α1,α2-adrenoblockers** (non-selective) - **Phentolamine**, dihydroergotamine

**α1-adrenoblockers** - **α1a-adrenoblockers** - **tamsulosin**

**α1b-adrenoblockers** - **prazosin**

**β- Adrenoblockers / adrenoceptor antagonists**

**β1,β2-Adrenoblockers** (non-selective) - **Propranolol**, timolol

**β1-adrenoblockers** - **atenolol, metrolol**

**Sympatholytics** (indirect binding on receptors)

**Reserpine**, guanethidine

### Indications + side effects

**α adreno-mimetics**

Pharmacological effects - Vasoconstriction of blood vessels

Mydriasis

Decrease NA peripheral

### Indications + side effects (cont)

**β adreno-mimetics**

**Indications** - Bronchial asthma, uterine relaxation (preserving pregnancy)

**pharmacological effects** - cause dilation of bronchial passages, Vasodilation in muscle and liver, Relaxation of uterine muscle, Release of insulin

**α adreno-blockers**

**Side effects** - hypotension

Tachycardia

**β adreno-blockers**

**Mechanism of action of antihypertensive action of beta adrenoblockers** - decrease cardiac output

Decrease renin secretion

reduce central sympathetic activity (selective BB))

#### Side effects

**Side effects β2 AB** - Heart insufficiency, bronchoconstriction, \*hypoglycemia\*, fatigue, dizziness, nausea, diarrhea

**Side effects β1 AB** -

### Specific drugs

**Phentolamine** (antagonises α1+2 adrenoceptors)

Decreases BP caused by adrenaline, affects -ive feedback mechanism (α2-adrenoceptors) in the synapse

**Indications** - Pheochromocytoma (adrenal gland tumour) + endarteritis (inflammation of arteries, legs)

**Side effects** - Orthostatic (standing) collapse (severe drop in BP) + tachycardia

reverse effects of adrenaline on BP

### Specific drugs (cont)

**Tamsulosin** (Selectively anatgonises/-blocks α1A-adrenoceptors)

**Indication** - benign prostate hyperplasia (increased cell production in a normal tissue or organ)

Relax smooth muscle of prostate gland

Help to decrease these symptoms

**Prazosin** (Selectively atangonises/blocks α1B-adrenoceptors in blood vessels)

Does not affect the -ive feedback mechanism in synapse

**Indication** - arterial hypertension

**Side effect** - orthostatic collapse

### Specific drugs

**Propranolol** - Non-selective β1,β2-adrenoblocker

Decrease heart output, decrease activity of SA + AV nodes, decrease BP due to action on:

Heart - decreases heart output

Kidney (propranolol decreases production of renin in the kidney)

CNS (decrease sympathetic activity on PNS))

**Atenolol, Metoprolol** (Selective β1-Adrenoblocker)

Cardioselective in therapeutic doses

drugs of choice in cardiac patients