Nonselective Beta-Blockers

Nonselective β-blockers were the first generation β-blockers and have antagonistic effects at both β₁ (heart, kidney) and β₂ receptors (lung, peripheral blood vessels and skeletal muscle) thus preventing direct sympathomimetics such as norepinephrine and epinephrine from binding to these receptors.



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"-olol" Suffix
Lolly
β blockers can be remembered by having the suffix, "olol." Examples of this are metoprolol and carvedilol.

Nonselective
β₁ and β₂
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Propranolol
Propane-lolly
Propranolol was the first successfully developed β-blocker. Initially developed for use in angina pectoris and then used as an anti-hypertensive, it is not commonly used for these indications today due to its β₂ blocking effects that may lead to side effects such as bronchospasm and thus exacerbation of chronic obstructive lung disease (COPD) and asthma. Other side effects of Propranolol include depression, exacerbation of peripheral arterial disease, and masking signs and symptoms of hypoglycemia in diabetics. Propranolol is now primarily used for treatment of thyroid storm, thryotoxicosis, essential tremor, prevention of bleeding esophageal varices, akathisia and chronic migraine prophylaxis.

Timolol
Time-mole-lolly
Timolol is a nonselective β-blocker that is the traditional first-line therapy for the reduction of intraocular pressure (IOP) in open-angle glaucoma and is part of the empiric therapy for acute-angle closure glaucoma. Timolol was initially shown to not be an effective systemic hypotensive agent; however, when formulated into a topical drug it was demonstrated to be extremely effective in reduction of IOP. Topical prostaglandins, however, are now a preferable initial therapy in open-angle glaucoma. The most serious possible side effects include cardiac arrhythmias and severe bronchospasms.

Nadolol
NATO-lolly
Nadolol is a nonselective β-blocker primarily used for the prevention of bleeding esophageal varices. It can also be used in the treatment of migraine headaches, adult ADHD, essential tremor and Parkinson's Disease. Its side effects include bradycardia, fatigue and bronchospasms.

Partial β Agonist
Partial Beta-fish Dragonist
These drugs block β-receptors; however, they also have intrinsic sympathomimetic activity (ISA) and partially activate the receptor. In high doses, they exert effects like epinephrine (increased pulse rate, increased blood pressure, bronchodilation).

Pindolol
Pin-doll-lolly
Pindolol is a β-blocker that is also a partial β-agonist. It can be used for treatment of angina pectoris and hypertension; however, is rarely done so due to its intrinsic sympathomimetic activity (ISA).

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Nonselective β with α Blocking

β₁ and β₂with Afro Block-guy

These drugs nonselectively block both β and α receptors. Their α-blocking effects give them a vasodilatory effect which potentiates the β-blocking effect to reduce blood pressure.

Carvedilol

Corvette-lolly

Carvedilol and labetolol are nonselective beta and alpha blocking drugs. Carvedilol is used in the treatment of CHF as an adjunct to conventional treatments (ACE inhibitors and diuretics). Labetolol is primarily used in the treatment of pregnancy-induced hypertension and can be used 2nd line in hypertensive emergencies.

Labetalol

Lab-beta-lolly

Labetolol is primarily used in the treatment of pregnancy-induced hypertension and can be used 2nd line in hypertensive emergencies.

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