

# Antagonist

Antagonist		Examples
Receptor antagonist	For cell surface receptors	<ul style="list-style-type: none"> <li>• ARBs: Angiotensin Receptor Blockers high blood pressure → Heart failure, chronic renal failure (insufficiency)</li> <li>• beta-adrenoceptor blockers prevent heart&amp; muscle contraction angina, myocardial infarction, heart failure, high blood pressure, anxiety</li> </ul>
	For nuclear receptors	<ul style="list-style-type: none"> <li>• Mineralocorticoid antagonist Diuretic→ removes edema caused by heart failure&amp; liver cirrhosis</li> <li>• Estrogen antagonist</li> </ul>
ion channel blockers		<p>Ca<sup>2+</sup> ion channel blocker for treating: ①high blood pressure ②angina</p> <p>Na<sup>+</sup> ion channel blocker for treating arrhythmia</p>
inhibitors	enzyme inhibitors	<ul style="list-style-type: none"> <li>• Cyclooxygenase inhibitor Pain relief (aspirin&amp; ibuprofen)</li> <li>• HMG-CoA Reductase inhibitor hypercholesterolemia</li> <li>• ACE inhibitor—angiotensin converting enzyme High blood pressure, heart failure, chronic renal failure (insufficiency)</li> </ul>
	transport inhibitors	<ul style="list-style-type: none"> <li>• SSRI: selective serotonin reuptake inhibitor → depression</li> <li>• Na-2CL-K symporter inhibitor → edema</li> </ul> <p>Works in renal epithelial cells to excrete urine and sodium</p>
	signal transduction inhibitors	<ul style="list-style-type: none"> <li>• Tyrosine Kinase inhibitor → myelocytic leukemia</li> <li>• Type 5 phosphodiesterase inhibitor → erectile dysfunction</li> </ul>

## Agonist (activators)

Agonist	Example
Surface receptors	Alpha-1 adrenergic agonist → effect: vasoconstriction Treats vasodilation conditions: Edema, congestion, allergy inflammation, rhinitis, sinusitis
Nuclear receptors	HRT: hormone receptor therapy → menopause Steroids → inflammation
Enzyme activators	Nitric oxide (activate guanylyl cyclase) Causes vasodilation by relaxation of vascular smooth muscle
Ion channel openers	K <sup>+</sup> ion channel opener → hypertension treatment

## Unconventional Drug Mechanisms

mechanism	Example
Structural protein disruption	Disrupting microtubules: → prevents phagocytosis in macrophages → prevents cancer cells proliferation
Enzymes	Streptokinase derived from bacteria → prevents strokes by thrombolysis
Covalent binding to macromolecules	Binds to DNA, disrupts DNA structure e.g. chemotherapeutics
Chemical rxn with small molecules	Anti-acidic drugs bind to HCL in stomach
Binding to free atoms or molecules	Binds to: ① Heavy metals (lithium poisoning) ② TNF as monoclonal antibody drugs
Nutrients	Vitamins, minerals
Exerting action due to physical properties	Hygroscopic → (laxative) relieves constipation
Antisense action	Antiviral: Binds to viral DNA/RNA preventing transcription
Antigens	Vaccines
Unknown mechanism	Anesthetics

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