

Pharmacology

Pharmacy Department

4th Grade

Antihypertensive Drugs

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MECHANISMS FOR CONTROLLING BLOOD PRESSURE

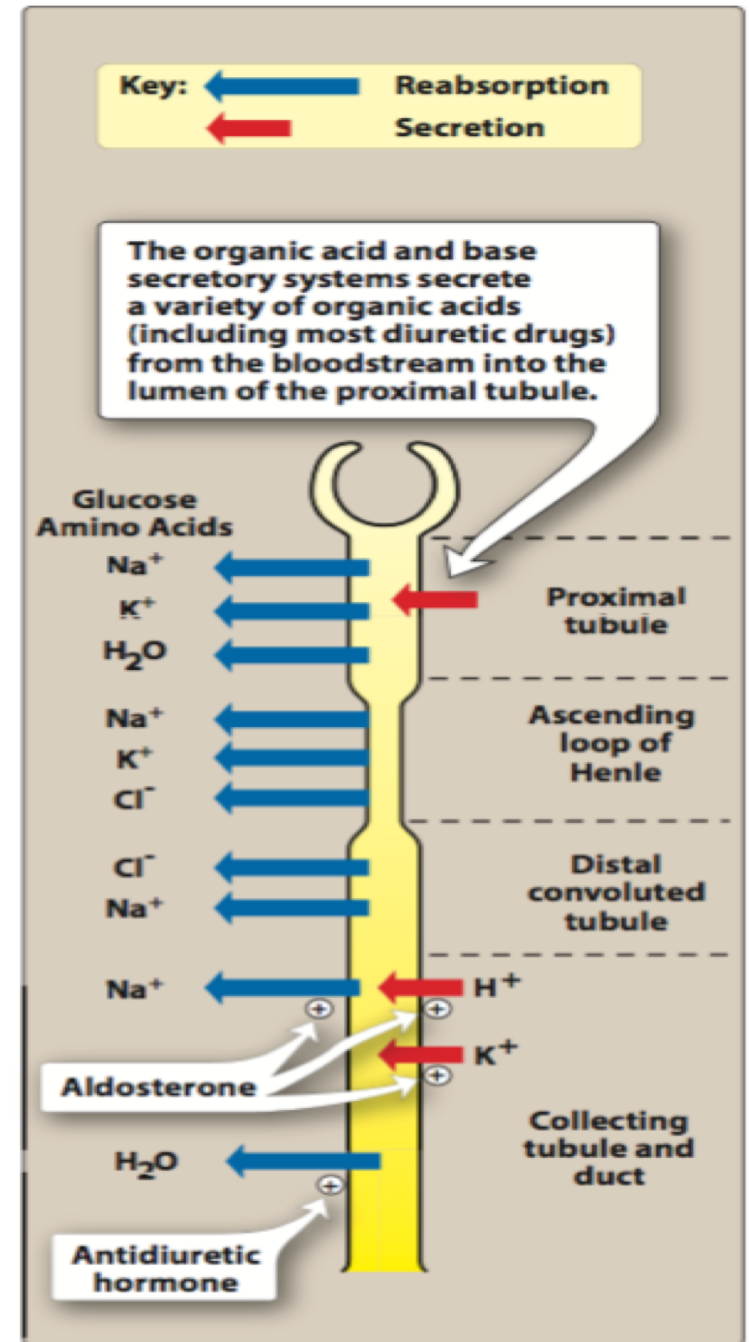
- Arterial blood pressure is regulated within a narrow range to provide adequate perfusion of the tissues without causing damage to the vascular system, particularly the arterial intima (endothelium).
- Arterial blood pressure(BP) is directly proportional to cardiac output(CO) and peripheral vascular resistance (PVR):

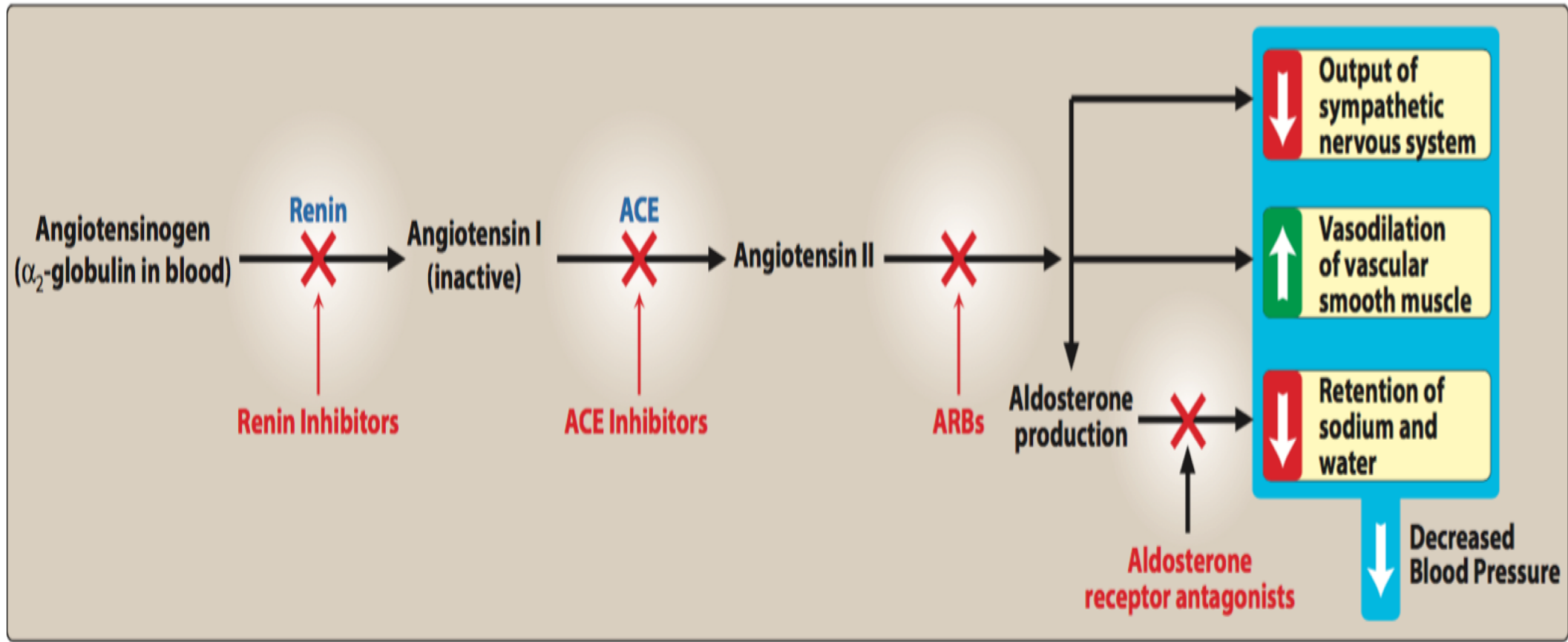
$$BP = CO \times PVR$$

- Cardiac output and peripheral resistance, in turn, are controlled mainly by two overlapping control mechanisms: the baroreflexes and the renin–angiotensin–aldosterone system .
- Most antihypertensive drugs lower blood pressure by reducing cardiac output and/or decreasing peripheral resistance.

NORMAL REGULATION OF FLUID AND ELECTROLYTES BY THE KIDNEYS :

Approximately 16% to 20% of the blood plasma entering the kidneys is filtered from the glomerular capillaries into Bowman's capsule. The filtrate, although normally free of proteins and blood cells, contains most of the low molecular weight plasma components in concentrations similar to that in the plasma. **These include glucose, sodium bicarbonate, amino acids, and other organic solutes, as well as electrolytes, such as Na⁺, K⁺, and Cl⁻.** **The kidney regulates the ionic composition and volume of urine by active reabsorption or secretion of ions and/or passive reabsorption of water at five functional zones along the nephron: 1) the proximal convoluted tubule, 2) the descending loop of Henle, 3) the ascending loop of Henle, 4) the distal convoluted tubule, and 5) the collecting tubule and duct**





*Thank
you!*