



Diuretics

Other diuretics: acetazolamide and the potassium sparing diuretics

Acetazolamide and the *potassium sparing diuretics* are diuretics but that is incidental to their primary indication.

We select these drugs for some other characteristic of the drug.

Acetazolamide:

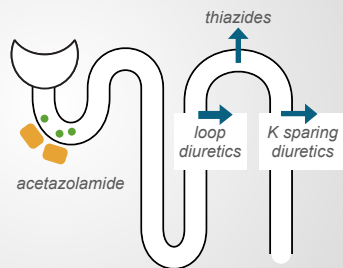
- ➡ Metabolic alkalosis
- ➡ Preventing altitude sickness
- ➡ Glaucoma/pseudotumor cerebri

Potassium sparing diuretics:

- ➡ Blood pressure
- ➡ Hypokalemia
- ➡ Heart failure

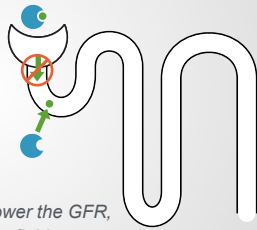
Acetazolamide acts in the proximal tubule

- ➡ proximal tubule
- thick ascending limb of the loop of Henle
- Distal convoluted tubule
- Cortical collecting duct



A closer look at acetazolamide

- ➔ Active in the tubular fluid
- ➔ 98% protein bound. Not filtered at the glomerulus.
- ➔ Secreted by the proximal tubule.

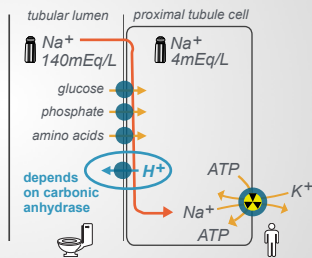


Secretion is GFR dependent, the lower the GFR, the less diuretic gets into the tubular fluid.

A closer look at acetazolamide

Proximal tubule: big dumb reabsorption.

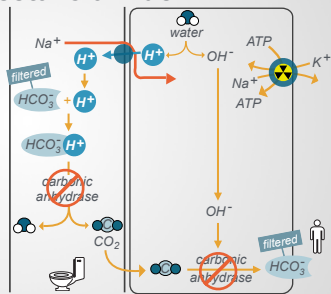
$\frac{2}{3}$ of the GFR is reabsorbed here



A closer look at acetazolamide

Hydrogen secretion is tied to sodium reabsorption

Acetazolamide blocks carbonic anhydrase



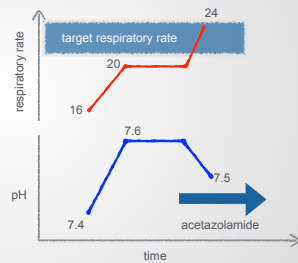
Acetazolamide increases the renal excretion of **sodium, potassium and bicarbonate**

Proximal RTA or RTA type 2

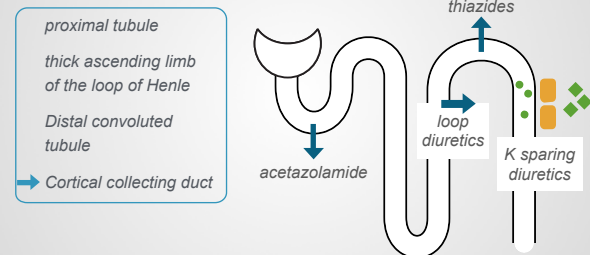
Therapy for **metabolic alkalosis**

Adjuvant therapy to prevent **seizures**

Acetazolamide can prevent altitude sickness



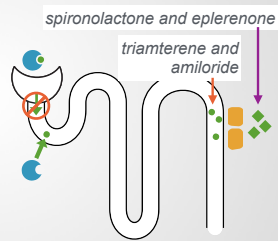
Potassium sparing diuretics act at the cortical convoluted duct



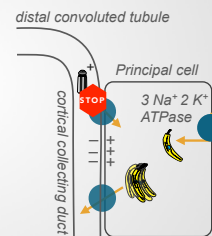
A closer look at potassium sparing diuretics

Four potassium sparing diuretics:

1. Amiloride
2. Triamterene
3. Spironolactone
4. Eplerenone

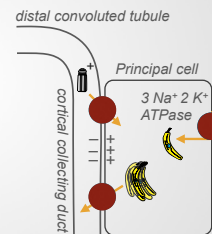


Triamterene and amiloride block the sodium channel in the cortical collecting tubule. This channel is called the epithelial sodium channel, eNaC.



Spironolactone and eplerenone are steroid hormones that regulate gene transcription.

Decrease expression of eNaC, Na K-ATPase and potassium channels.



Efficacy of Spironolactone Therapy in Patients With True Resistant Hypertension

John A. Sirtori, Claudio Mancia, Roberto Paoletti, 10 Authors

Abstract: Spironolactone, an aldosterone antagonist, is active in the treatment of hypertension. In a study of 100 patients with true resistant hypertension, the effect of spironolactone was evaluated. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of spironolactone resulted in a significant reduction in blood pressure. The study was conducted in a double-blind, randomized, controlled trial. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of spironolactone resulted in a significant reduction in blood pressure. The study was conducted in a double-blind, randomized, controlled trial.

Key Words: spironolactone, resistant hypertension, aldosterone antagonist

Original Articles

Improvement in Blood Pressure With Inhibition of the Epithelial Sodium Channel in Blacks With Hypertension

Charles H. Henrich, J. Edgar, Walter S. Anderson, 10 Authors

Abstract: Inhibition of the epithelial sodium channel (ENaC) with amiloride improves blood pressure in blacks with hypertension. The study was conducted in a double-blind, randomized, controlled trial. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of amiloride resulted in a significant reduction in blood pressure. The study was conducted in a double-blind, randomized, controlled trial.

Key Words: amiloride, hypertension, epithelial sodium channel

Mineralocorticoids

Effect of Spironolactone on Blood Pressure in Subjects With Resistant Hypertension

John A. Sirtori, Claudio Mancia, Roberto Paoletti, 10 Authors

Abstract: Spironolactone, an aldosterone antagonist, is active in the treatment of hypertension. In a study of 100 patients with resistant hypertension, the effect of spironolactone was evaluated. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of spironolactone resulted in a significant reduction in blood pressure. The study was conducted in a double-blind, randomized, controlled trial.

Key Words: spironolactone, resistant hypertension, aldosterone antagonist

The New England Journal of Medicine

Spironolactone, a Selective Aldosterone Blocker, in Patients with Left Ventricular Dysfunction after Myocardial Infarction

John A. Sirtori, Claudio Mancia, Roberto Paoletti, 10 Authors

Abstract: Spironolactone, a selective aldosterone blocker, improves survival in patients with left ventricular dysfunction after myocardial infarction. The study was conducted in a double-blind, randomized, controlled trial. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of spironolactone resulted in a significant reduction in mortality. The study was conducted in a double-blind, randomized, controlled trial.

Key Words: spironolactone, left ventricular dysfunction, myocardial infarction

A New Major Medical Breakthrough

ALDACTONE[®]

For Relief of Intractable Edema

Abstract: Aldactone (spironolactone) is a new major medical breakthrough for the relief of intractable edema. The study was conducted in a double-blind, randomized, controlled trial. The patients were treated with a combination of a diuretic, a beta-blocker, and a vasodilator. The addition of aldactone resulted in a significant reduction in edema. The study was conducted in a double-blind, randomized, controlled trial.

Key Words: aldactone, edema, intractable

NEJM, Jan 9, 1961