

Effects of different classes of diuretics on kidney excretion of solutes

	Na	K	H	Ca	Mg	Cl	HCO ₃
CA inhibitors	↑	↑↑	↓	-	?	↑	↑↑
Osmotic	↑↑	↑	?	↑	↑↑	↑	↑
Loop diuretics	↑↑↑	↑↑	↑	↑↑	↑↑	↑↑	↑*
Thiazides	↑↑	↑↑	↑	↓	↑	↑	↑
K-sparing	↑	↓	↓	↓?	↓	↑	-

Some important points in diuretic use.

- (1) **Edema** or volume overload caused by heart failure, renal diseases and hepatic cirrhosis etc.

Osmotic diuretics are not used in congestive heart failure.

Spironolactone is the drug of choice in treating edema associated with hepatic cirrhosis. On the other hand, acetazolamide is contraindicated.

Most diuretics (particularly loop diuretics and thiazides) may cause hypokalemia which increases the toxicity of digitalis glycosides.

- (2) To adjust **electrolyte balance**:

Loop diuretics increase calcium excretion, and thus can be used to treat hypercalcemia. In contrast, thiazides decrease calcium excretion, and thus may be useful in treating kidney stone and osteoporosis.

CA inhibitors can be used to treat metabolic alkalosis.

- (3) **Hypertension**: Thiazides are the first choice.

- (4) To adjust **fluid and electrolyte distribution in different compartments of body**:

For example, mannitol can be used to reduce intracranial pressure and acetazolamide can be used to treat glaucoma and acute mountain sickness.

- (5) To **increase excretion of toxic substance from kidney**:

Loop diuretics may be used to treat anion intoxication (bromide, iodide etc). Osmotic diuretics may be used to treat acute renal failure in hemoglobinuria.

- (6) **Diabetes insipidus**.

Apparent paradoxical role of thiazides in treating diabetes insipidus by mechanism of volume contraction.

Examples of drug interactions

Most diuretics (except K^+ -sparing diuretics) may cause hypokalemia which increases the toxicity of digitalis glycosides and quinidine.

Drugs that inhibit proximal tubule excretion of acid and basis (e.g. Probenecid) may negatively affect the diuretic effects.

Non-steroid anti-inflammatory drugs such as aspirin may blunt diuretic effect.

Use of amino glycoside with loop diuretics (ethacrinic acid) may potentiate ototoxicity.