Benazepril

- Drug Information

Brand Names:

Lotensin®, Lotrel®, Fortekor®

Pharmacology:

Angiotensin converting enzyme (ACE) inhibitor.

Indications:

Benazepril may be useful as a vasodilator in the treatment of heart failure and as an antihypertensive agent, particularly in dogs.
Benazepril may be of benefit in treating the clinical signs associated with valvular heart disease and left to right shunts.
ACE inhibitors may also be of benefit in the adjunctive treatment of chronic kidney disease and for protein-losing nephropathies.
In cats, benazepril may be useful for treatment of hypertension, adjunctive treatment of hypertrophic cardiomyopathy, and for reducing protein loss associated with chronic kidney disease.

ContraIndications:

- General

Contraindicated in patients with known sensitivity to this type of drug.
Use with caution in patients with hyponatremia, coronary or cerebrovascular insufficiency, pre existing hematologic disease or SLE.
Patients with severe CHF need close monitoring at the beginning of treatment with this drug.
Because ACE inhibitors may decrease glomerular filtration rate (GFR) and worsen azotemia, they are generally avoided in critically ill acute kidney injury patients.
Use in pregnancy only when benefits outweigh the risk to the fetus.

Interactions:

- General Interactions

No identified General Interactions at time of publishing.

- Category Interactions

- Alpha agonist

Concurrent use may result in additive effects on blood pressure and heart rate.

- Angiotensin II receptor blocker

Concurrent use may increase the risk of adverse effects such as hypotension, syncope, hyperkalemia, changes in renal function, and acute renal insufficiency.

- Antidiabetic

Possible increased risk for hypoglycemia; enhanced monitoring recommended.

- Antihistamine

Concurrent use may result in additive hypotension and orthostasis.

- Antihypertensive

Concurrent use may result in hypotension, hypovolemia, and orthostasis.

- Barbiturates

Concurrent use may enhance the hypotensive effects of benazepril.

- Benzodiazepine

Concurrent use may lead to low blood pressure and orthostasis.

- Corticosteroid

May decrease antihypertensive effects by causing fluid and sodium retention.

- Diuretic

Concomitant diuretics can cause hypotension. Consider reducing the dose of diuretic if adding Benazepril.

- Muscle relaxant

Concurrent use may have additive blood pressure lowering effects.

- NSAID-Non Steroidal Antiinflammatory Drug

Potentially could increase the risk for nephrotoxicity and/or reduce efficacy of the ACE inhibitor; monitoring is advised.

- Opiate agonist
Concurrent use may result in additive hypotension and orthostasis.
- Phenothiazine
Concurrent administration may cause orthostatic hypotension and syncope associated with vasodilation.
- Potassium Sparing Diuretic
Concurrent use may increase hyperkalemic effects. Enhanced monitoring of serum potassium is recommended.
- Protein bound drug
May displace other highly protein bound drugs resulting in increased activity of both.
- TCA - Tricyclic Antidepressant
Concurrent use may result in additive hypotension and orthostasis.
- Vasodilator
Concomitant vasodilators can cause hypotension. Consider reducing the dose of diuretic if adding Benazepril.
- Drug Interactions
- Allopurinol
Concurrent use may cause severe hypersensitivity reactions, neutropenia, agranulocytosis, and serious infections.
- Apomorphine
Concurrent use may potentiate the hypotensive effects of benazepril
- Aspirin / Acetylsalicylic acid
Aspirin may potentially negate the decrease in systemic vascular resistance induced by ACE inhibitors; however, one study in dogs using low-dose aspirin showed that the hemodynamic effects of enalaprilat (active metabolite of Enalapril, a related drug) were not affected.
- AzaTHIOprine
Concurrent use may result in an increased risk of neutropenia or leukopenia.
- BusPIRone
Concurrent use may increase risk of hypotension and orthostasis.
- Cabergoline
Concurrent use may lead to additive hypotension.
- CycloSPORINE
Concurrent administration may increase the risk of hyperkalemia or precipitate acute renal failure.
- Dalteparin
Concurrent use may increase risk of hyperkalemia.
- Enoxaparin
Concurrent use may increase risk of hyperkalemia.
- Fenoldopam
Concurrent administration may theoretically increase the risk of severe hypotension.
- Furazolidone
Concurrent use may increase risk of hypotension.
- Furosemide
Use conservative initial doses when also starting furosemide - may cause hemodynamic changes that can lead to acute renal failure.
- Glycerine
Concurrent use may increase risk of hypovolemia and hypotension.
- Heparin sodium or calcium
Concurrent use may increase the risk of hyperkalemia.
- Interferon
Concurrent use may increase risk of granulocytopenia.
- Iron dextran
Benazepril may increase severity and risk of systemic adverse effects associated with parenteral administration of iron.
- Lanthanum Carbonate
In theory, lanthanum may bind with drugs in the GI track and interfere with absorption. Give

lanthanum 2 hours before or after benazepril.
- Lithium; Carbonate or Citrate
Increased serum lithium levels possible; increased monitoring required.
- Methotrexate
Concurrent use may potentiate the risk of liver injury.
- Mirtazapine
Concurrent administration may result in additive hypotension and orthostasis.
- Naltrexone
Concurrent administration may increase risk of hepatotoxicity.
- Nitroglycerin Ointment
Concurrent administration may increase risk of hepatotoxicity.
- Pentoxifylline
Concurrent use may increase risk of hypotension.
- Pergolide mesylate
Concurrent use may increase risk of severe hypotensive episodes.
- Polyethylene Glycol 3350 (PEG 3350)
Concurrent use may increase risk of fluid and electrolyte imbalances leading to renal impairment, cardiac arrhythmias, and seizures.
- Potassium chloride or gluconate
Potassium concomitantly can cause hyperkalemia.
- Prazosin
Concurrent use can cause additive hypotension.
- Pregabalin
Concurrent use may increase risk of angioedema.
- Procarbazine
Concurrent use can cause additive hypotension and orthostasis.
- Selegiline
Concurrent use can cause additive hypotension and orthostasis.
- SulfADIAZINE or sulfamethoxazole/ trimethoprim
Concurrent use may increase the risk of hyperkalemia.
- Thioguanine
Concurrent use may potentiate the risk of liver injury.
- Trazodone
Concurrent use may result in additive hypotension and orthostasis.

Adverse Effects:

- General
Benazepril's adverse effect profile in dogs is not well described.
Can cause vomiting, diarrhea and anorexia.
Potentially can cause hyperkalemia, hypotension and renal dysfunction.
Less likely can cause immune mediated reactions such as rashes, neutropenia and agranulocytosis.

Dosages:

- Small Animal
- Dog
Adjunctive treatment of heart failure (extra-label in US): 0.25 - 0.5 mg/kg by mouth every 24 hours.
Adjunctive treatment of hypertension and/or proteinuria (extra-label): 0.25 - 0.5 mg/kg by mouth every 12 - 24 hours.
- Cat
Adjunctive treatment of hypertrophic heart failure (extra-label): While definitive evidence for efficacy is lacking, some recommend 0.25 - 0.5 mg/kg by mouth every 12 - 24 hours.
Adjunctive treatment of hypertension (extra-label): Most recommend using amlodipine as the first-line agent, but in cats that do not have blood pressure controlled with amlodipine alone or in those with concurrent proteinuria, benazepril at 0.5 - 1 mg/kg by mouth every 12 - 24 hours has been

recommended. Monitor renal function.
Reduction of proteinuria associated with chronic kidney disease(extra-label in US): Most recommend 0.5 - 1 mg/kg by mouth every 24 hours (UK labeled dosage). Some anecdotal dosage recommendations state that some cats may require the drug every 12 hours, but higher dosages may worsen preexisting azotemia; caution is advised.

Special Notes:

None