POTASSIUM CITRATE

(poe-**tass**-ee-um)

potassium citrate

potassium bicarbonate/potassium citrate
Effer-K, K-Lyte DS

potassium chloride/potassium bicarbonate/potassium citrate
Kaochlor Eff

potassium gluconate/potassium citrate
Twin-K

trikates (potassium acetate/potassium bicarbonate/potassium citrate)
Tri-K

Classification
Therapeutic: mineral and electrolyte replacements/supplements

Pregnancy Category C

Indications
Treatment/prevention of potassium depletion.

Action
Maintain acid-base balance, isotonicity, and electrophysiologic balance of the cell. Activator in many enzymatic reactions; essential to transmission of nerve impulses; contraction of cardiac, skeletal, and smooth muscle; gastric secretion; renal function; tissue synthesis; and carbohydrate metabolism. **Therapeutic Effects:** Replacement. Prevention of deficiency.

Pharmacokinetics
Absorption: Well absorbed following oral administration.
Distribution: Enters extracellular fluid; then actively transported into cells.
Metabolism and Excretion: Excreted by the kidneys.
Half-life: Unknown.

TIME/ACTION PROFILE (increase in serum potassium levels)

ROUTE	ONSET	PEAK	DURATION
PO	unknown	1–2 hr	unknown

Contraindications/Precautions
Contraindicated in: Hyperkalemia; Severe renal impairment; Untreated Addison's disease; Some products may contain tartrazine (FDC yellow dye #5) or alcohol; avoid using in patients with known hypersensitivity or intolerance; Hyperkalemic familial periodic paralysis.
Use Cautiously in: Cardiac disease; Renal impairment; Diabetes mellitus (liquids may contain sugar); Hypomagnesemia (may make correction of hypokalemia more difficult); GI hypomotility including dysphagia or esophageal compression from left atrial enlargement (tablets, capsules); Patients receiving potassium-sparing drugs.

Adverse Reactions/Side Effects
CNS: confusion, restlessness, weakness. **CV:** ARRHYTHMIAS, ECG changes. **GI:** abdominal pain, diarrhea, flatulence, nausea, vomiting*tablets, capsules only*, GI ulceration, stenotic lesions. **Neuro:** paralysis, paresthesia.

Interactions
Drug-Drug: Use with **potassium-sparing diuretics** or **ACE inhibitors** or **angiotensin II receptor antagonists** may lead to hyperkalemia. **Anticholinergics** may ↑ GI mucosal lesions in patients taking wax-matrix potassium chloride preparations.

Route/Dosage
Expressed as mEq of potassium. Potassium acetate contains 10.2 mEq/g; potassium bicarbonate contains 10 mEq potassium/g; potassium chloride contains 13.4 mEq potassium/g; potassium citrate contains approximately 10mEq/g.

Normal Daily Requirements
PO (Adults): 40–80 mEq/day.
PO (Children): 2–3 mEq/kg/day.
PO (Neonates): 2–6 mEq/kg/day.

Prevention of hypokalemia during Diuretic Therapy

PO (Adults): 20–40 mEq/day in 1–2 divided doses; single dose should not exceed 20 mEq.
PO (Neonates , Infants and Children): 1–2 mEq/kg/day in 1–2 divided doses.

Treatment of Hypokalemia

PO (Adults): 40–100 mEq/day in divided doses.
PO (Neonates , Infants and Children): 2–5 mEq/kg/day in divided doses.

NURSING IMPLICATIONS

Assessment

- Assess for signs and symptoms of hypokalemia (weakness, fatigue, U wave on ECG, arrhythmias, polyuria, polydipsia) and hyperkalemia (see Toxicity and Overdose).
- ***Lab Test Considerations:*** Monitor serum potassium before and periodically during therapy. Monitor renal function, serum bicarbonate, and pH. Determine serum magnesium level if patient has refractory hypokalemia; hypomagnesemia should be corrected to facilitate effectiveness of potassium replacement. Monitor serum chloride because hypochloremia may occur if replacing potassium without concurrent chloride.
- ***Toxicity and Overdose:*** **Symptoms of toxicity are those of hyperkalemia (slow, irregular heartbeat; fatigue; muscle weakness; paresthesia; confusion; dyspnea; peaked T waves; depressed ST segments; prolonged QT segments; widened QRS complexes; loss of P waves; and cardiac arrhythmias).**
- Treatment includes discontinuation of potassium, administration of sodium bicarbonate to correct acidosis, dextrose and insulin to facilitate passage of potassium into cells, calcium salts to reverse ECG effects (in patients who are not receiving digoxin), sodium polystyrene used as an exchange resin, and/or dialysis for patient with impaired renal function.

Potential Nursing Diagnoses

Imbalanced nutrition: less than body requirements (Indications)

Implementation

For most purposes, potassium chloride should be used, except for renal tubular acidoses (hyperchloremic acidosis), in which other salts are more appropriate (potassium bicarbonate, potassium citrate, or potassium gluconate)., If hypokalemia is secondary to diuretic therapy, consideration should be given to decreasing the dose of diuretic, unless there is a history of significant arrhythmias or concurrent digitalis glycoside therapy.

- **PO:** Administer with or after meals to decrease GI irritation.
- Use of tablets and capsules should be reserved for patients who cannot tolerate liquid preparations.
- Dissolve effervescent tablets in 3–8 oz of cold water. Ensure that effervescent tablet is fully dissolved. Powders and solutions should be diluted in 3–8 oz of cold water or juice (do not use tomato juice if patient is on sodium restriction). Instruct patient to drink slowly over 5–10 min.
- Tablets and capsules should be taken with a meal and full glass of water. **Do not chew or crush enteric-coated or extended-release tablets or capsules.**

Patient/Family Teaching

- Explain to patient purpose of the medication and the need to take as directed, especially when concurrent digoxin or diuretics are taken. A missed dose should be taken as soon as remembered within 2 hr; if not, return to regular dose schedule. Do not double dose.
- Emphasize correct method of administration. GI irritation or ulceration may result from chewing enteric-coated tablets or insufficient dilution of liquid or powder forms.
- Instruct patient to avoid salt substitutes or low-salt milk or food unless approved by health care professional. Patient should be advised to read all labels to prevent excess potassium intake.
- Advise patient regarding sources of dietary potassium. Encourage compliance with recommended diet.
- Instruct patient to report dark, tarry, or bloody stools; weakness; unusual fatigue; or tingling of extremities. Notify health care professional if nausea, vomiting, diarrhea, or stomach discomfort persists. Dosage may require adjustment.
- Emphasize the importance of regular follow-up exams to monitor serum levels and progress.

Evaluation/Desired Outcomes

- Prevention and correction of serum potassium depletion.
- Cessation of arrhythmias caused by digoxin toxicity.

Why was this drug prescribed for your patient?