sodium citrate and citric acid (see: de-ium-sye-trate and sit-rick-ee-
) Bicitra, Oracit, PMS-Dicitrate, Shohl's Solution modified

**Classification**
Pharmacologic: antacids, mineral and electrolyte replacements/supplements
Pharmacologic: alkalinizing agents

**Pregnancy Category C**

**Indications**

**Action**
Converted to bicarbonate in the body, resulting in increased blood pH. As bicarbonate is renally excreted, urine is also alkalinized, increasing the solubility of cystine and uric acid. Neutralizes gastric acid.

**Therapeutic Effects:**

**Pharmacokinetics**

**Absorption:**
Well absorbed following oral administration.

**Distribution:**
Rapidly and widely distributed.

**Metabolism and Excretion:**
Rapidly oxidized to bicarbonate, which is excreted primarily by the kidneys. Small amounts (5%) excreted unchanged by the lungs.

**Half-life:**
Unknown.

**TIME/ACTION PROFILE (effects on serum pH)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>rapid (min–hr)</td>
<td>unknown</td>
<td>4–6 hr</td>
</tr>
</tbody>
</table>

- **Indications/Precautions**
Contraindicated in: Severe renal insufficiency; Severe sodium restriction; HF, untreated hypertension, edema, or toxemia of pregnancy.

**Use Cautiously in:**
OB: Lactation: Safety not established.

**Adverse Reactions/Side Effects**

**GI:**
Diarrhea.

**F and E:**
Fluid overload, hypernatremia (severe renal impairment), hypocalcemia, metabolic alkalosis (large doses only), MI, tetany.

**Interactions**

**Drug-Drug:**
May partially antagonize the effects of antihypertensives. Urinary alkalinization may result in salicylate or barbiturate levels or levels of quinidine, flecainide, or amphetamines.

**Route/Dosage**

**Alkalinizer**
PO (Adults): 10–30 mL solution diluted in water 4 times daily.
PO (Children): 5–15 mL solution diluted in water 4 times daily.

**Antiurolithic**
PO (Adults): 10–30 mL solution diluted in water 4 times daily.

**Neutralizing Buffer**
PO (Adults): 15–30 mL solution diluted in 15–30 mL of water.

**NURSING IMPLICATIONS**

**Assessment**
- Assess patient for signs of alkalosis (confusion, irritability, paresthesia, tetany, altered breathing pattern) or hypernatremia (edema, weight gain, hypertension, tachycardia, fever, flushed skin, mental irritability) throughout therapy.
- Monitor patients with renal dysfunction for fluid overload (discrepancy in intake and output, weight gain, edema, rales/crackles, and hypertension).
- **Lab Test Considerations:**
  - Monitor serum pH if used as alkalinizing agent.

**Contraindications/Precautions**
Contraindicated in: Severe renal insufficiency, Severe sodium restriction, HF, untreated hypertension, edema, or toxemia of pregnancy.

**Use Cautiously in:**
OB: Lactation: Safety not established.
Potential Nursing Diagnoses
Deficient knowledge, related to medication regimen (Patient/Family Teaching)

Implementation
● PO: Solution is more palatable if chilled. Administer with 30–90 mL of chilled wa-
ter. Administer 30 min after meals or as bedtime snack to minimize saline laxative
effect.
● When used as preanesthetic, administer 15–30 mL of sodium citrate with 15–30
mL of chilled water.

Patient/Family Teaching
● Instruct patient to take as directed. Missed doses should be taken within 2 hr. Do
not double doses.
● Instruct patients receiving chronic sodium citrate on correct method of monitor-
ing urine pH, maintenance of alkaline urine, and the need to increase fluid intake
to 3000 mL/day. When treatment is discontinued, pH begins to fall toward pre-
treatment levels.
● Advise patients receiving long-term therapy on need to avoid salty foods.

Evaluation/Desired Outcomes
● Correction of metabolic acidosis.
● Maintenance of alkaline urine with resulting decreased stone formation.
● Buffering the pH of gastric secretions, thereby preventing aspiration pneumonitis
associated with intubation and anesthesia.

Why was this drug prescribed for your patient?