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**Lab Dept:** Urine/Stool

**Test Name:** CITRATE EXCRETION, TIMED URINE

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***General Information***

**Lab Order Codes:** UCIT

**Synonyms:** Citric Acid, Urine; Urinary Citrate Excretion

**CPT Codes:** 82507 - Citrate

**Test Includes:** Urine Citrate concentration in mg/specimen.

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***Logistics***

**Test Indications:** Useful for diagnosing risk factors for patients with calcium kidney stones and for monitoring results of therapy in patients with calcium stones or renal tubular acidosis.

**Lab Testing Sections:** Urine/Stool - Sendouts

**Referred to:** Mayo Medical Laboratories (Test: CITR)

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** 1 - 3 days, test set up Monday – Saturday

**Special Instructions:** Submit an entire 24-hour urine collection. **Refrigerate specimen** during and after collection. See [Patient Preparation](#).

**Note:** Starting and ending times of collection are required for a timed urine collection and must be documented electronically or on the proper request form.

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***Specimen***

**Specimen Type:** Urine, timed collection

**Container:** Plastic leakproof container. Urine GUARD® collection container is preferred for a timed urine sample. See [Collection](#) to evaluate preservation of the sample during collection.

<b>Draw Volume:</b>	Submit an entire 24-hour urine collection
<b>Processed Volume:</b>	5 mL (Minimum: 1 mL) aliquot from a 24 hour collection
<b>Collection:</b>	Refrigerate specimen during and after collection. Refrigeration during the entire collection is an acceptable method of preservation for this test.  <b>OR</b> 5 mL of diazolidinyl urea (Germail) can be added at the start of the collection as an acceptable preservation, but may impact other possible 24 hour urine collections if the intent is to collect them simultaneously. Please evaluate acceptable methods of preservation for each test analyte before choosing Germail as a preservative.
<b>Special Processing:</b>	Lab Staff: Measure total urine volume. Mix the specimen well before taking 5 mL (Minimum: 4 mL) aliquot. Store and send refrigerated, in a 10 mL urine tube. Patient's age and 24 hour volume are required on request form for processing.
<b>Patient Preparation:</b>	Any drug that causes alkalemia or acidemia may be expected to alter citrate excretion and should be avoided, if possible.
<b>Sample Rejection:</b>	Specimens other than timed urine; warm specimens; unlabeled or mislabeled specimens; incorrect preservative

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### ***Interpretive***

<b>Reference Range:</b>	Lower limit of normal at age 20 is 150 mg/specimen and increases at a rate of 7.11 mg/24 h for each year over age 20.  Upper limit: 1191 mg/24 h for each age level  No pediatric reference values at this time (0 – 19 years). No reference ranges for ages greater than 60. Reference values are provided with the report for patients greater than 19 and less than 61 years of age.  The reference values are for 24 hour collections.  Note: Any value less than the mean for 24 hours represents a potential risk for kidney stone formation and growth. Patients with low urinary citrate, and new or growing stone formation, may benefit from adjustments in therapy known to increase urinary citrate excretion. Very low levels (<150 mg/24 hours) suggest investigation for the possible diagnosis of metabolic acidosis (eg, renal tubular acidosis).
<b>Critical Values:</b>	N/A

**Limitations:**

Drugs that lower systemic pH, potassium, and/or magnesium lower urine citrate and are to be avoided in patients with tendency to calcium stones.

Conversely, drugs that raise systemic pH, potassium, and/or magnesium may raise urine citrate and should be considered in treating patients or interpreting results.

**Methodology:**

Enzymatic

**References:**

[Mayo Clinic Laboratories](#) July 2020

**Updates:**

12/15/2015: Units update, previously reported as mg/spec, now mg/24 h.

7/28/2020: Mayo will no longer report out the Citrate concentration. Updated preservative info.