

Aliquotting of 24-Hour Urines for Multiple Tests

When 24-hour urine tests such as calcium, magnesium, oxalate, phosphorus, and/or citrate are ordered **in combination and/or with uric acid**, the collection requirements currently specify using unpreserved urine which is collected, stored, and transported under refrigerated conditions to the receiving facility. Following receipt, adjustment of pH is then desirable for optimum specimen stability during transport to the central laboratory. A kit of aliquot tubes is available from Marshfield Labs for this purpose which provides automatic pH adjustment. This kit consists of two tubes, a Calcium/Oxalate Tube and a Uric Acid Tube with the following characteristics:

| Aliquot Tube Type: | Calcium / Oxalate | Uric Acid |
|---------------------------|--|--|
| Contains: | Acid preservative (lowers pH) | Alkaline preservative (raises pH) |
| Contents: | Sulfamic acid, ca. 50 mg | Sodium carbonate, ca. 30 mg |
| Tests: | Calcium Oxalate Citrate Magnesium Phosphorus | Uric Acid Myoglobin random urine Beta-2-microglobulin random urine |
| Preservative Function: | Maintains solubility of salts Prevents bacterial growth | Maintains solubility of uric acid which may precipitate at the normal (acidic) pH of urine |

PROCEDURE

1. *Acidified Aliquot.* Mix urine well, measure total volume and transfer about 10 mL of urine to the **Calcium /Oxalate Aliquot Tube** ($\geq \frac{3}{4}$ full) for the tests shown in the table above. This will acidify the urine sample appropriately. Mix tube with preservative by inverting several times. As an alternative to this tube, fill an empty tube with about 10 mL urine and add 0.1 mL of 6 N hydrochloric acid. Refrigerate sample after mixing.
2. *Alkaline Aliquot.* If the total urine volume is ≥ 1500 mL, fill the **Uric Acid Aliquot Tube** with the urine sample. If the total urine volume is < 1500 mL, fill the tube only about half. Mix tube with preservative by inverting several times. This will provide pH adjustment to about pH 7-9. As an alternative to this tube, using an empty tube and a pH meter or pH paper, transfer urine to tube and adjust pH to pH 8-9 using 20% sodium hydroxide solution. Refrigerate sample.
3. *Untreated Aliquot.* If urinary Total Protein is also ordered, or Immunofixation, Random or 24-Hour Urine, no pH adjustment is required. Transfer urine to an empty tube, mark tube: "Unpreserved Urine" and store refrigerated, submitting this third aliquot.

NOTE:

If Marshfield Labs' preservative tubes or facilities/reagents for pH adjustment are unavailable, please submit the entire 24-hour urine collection, refrigerating the collection during transport.