

## Protein (Total Protein), Urine

**Analyte:** Protein, total

**Specimen Type:** Urine without preservatives\*\*

**Optimum Volume:** 0.5 mL

**Stability:**

2-8 Degrees C	-20 Degrees C	-70 Degrees C
2 days	1 month	N.A.*

**Reporting Units:** mg/dL; ug/mg Creatinine (normalized)

**Method:** Turbidimetric

**Biological or Clinical Significance:**

Urine is formed by ultrafiltration of plasma across the glomerular capillary wall. Proteins with a relative molecular mass over 40,000 are almost completely retained, while smaller substances may enter the glomerular filtrate. Most of the protein that freely passes through the glomerulus is reabsorbed in the tubule and catabolized.

Urine protein measurements are used for the diagnosis and treatment of disease conditions such as renal or heart diseases, or thyroid disorders, which are all characterized by proteinuria or albuminuria. The role of urine total in assessing impending or reversible acute kidney injury is not entirely clear. Inflammation associated with multiple forms of morbidity has been shown to be associated with increased urine protein, and this can apparently be associated with acute renal failure that may or may not be reversible. The proteinuria that occurs during inflammation appears to be a mixture of glomerular and tubular dysfunction.

Turbidimetric methods using trichloroacetic acid (TCA) or sulfosalicylic acid (SSA) precipitate proteins in the sample depending on their size; the resulting turbidity may be unstable and flocculate. Reagents of dye-binding methods such as Coomassie blue and pyrogallol red-molybdate react with proteins depending on their amino acid composition, but may stain glass and plastic ware. Because of their reaction mechanisms, the various methods—turbidimetric and colorimetric—should be expected to display different sensitivities to various proteins, especially to protein fragments such as Bence Jones proteins and small proteins.

**Principle of Test Method:**

The total protein assay is an automated turbidimetric assay.

\*Please contact PBI for stability information.

\*\*Spontaneous, 24-hour, or second morning void urine samples may be used.