

# Cystatin C

## Overview

- Cystatin C is a cysteine proteinase inhibitor, produced by nucleated cells. It is produced and destroyed at a constant rate and is found in a variety of body fluids such as blood, spinal fluid, and breast milk.
- Cystatin C is filtered out of the blood by the glomeruli in the kidneys, forming a filtrate fluid. The body then reabsorbs Cystatin C, glucose, and other substances from the filtrate, allowing remaining substances to be carried with the fluid to the bladder and excreted as urine.
- The Cystatin C that is reabsorbed is then broken down and is not returned to the blood. If the filtration rate is reduced, indicating decreased kidney function, blood levels of Cystatin C increase, indicating how well a patient's kidneys are functioning.

## Diagnostic Value

The test may be used as an alternative to creatinine and creatinine clearance to screen for and monitor kidney dysfunction. It is useful when creatinine measurement is not appropriate, e.g., in patients 1) who have liver cirrhosis, 2) are obese, 3) are malnourished, 4) have reduced muscle mass. Particularly in the elderly, measuring Cystatin C may also be useful in the early detection of kidney disease when other parameters might still be normal.

Since it is formed at a constant rate and freely filtered by the kidneys, Cystatin C is inversely proportional to the glomerular filtration rate (GFR); i.e., high values indicate low GFRs and lower values indicate higher GFRs, similar to creatinine. However, unlike creatinine, concentrations of Cystatin C are not affected by gender, age or race. It is also not affected by infections or inflammatory or neoplastic states.

## Principle of Assay

Methodology: Nephelometric

Polystyrene particles coated with antibodies specific to human cystatin C are aggregated when mixed with samples containing human cystatin C. These aggregates scatter a beam of light passed through the sample. The intensity of the light is proportional to the concentration of the relevant protein in the sample. The result is compared with a standard of known concentration.

## Uses

- As an index of GFR, particularly in patients where serum creatinine may be misleading (very obese, elderly, and malnourished)
- Assessing renal function in patients suspected of having kidney disease.
- Monitoring treatment response in patients with kidney disease.

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## Specimen Requirements

1.0 mL fasting serum (minimum 0.5 mL). Sodium Heparin or lithium heparin fasting plasma are also acceptable.

Instructions: *Overnight fasting is required.* Transport refrigerated with cold packs. Shipping at room temperature is unacceptable.

Stability – RMT 24 hours REFT – 7 days

Sanford Laboratories Test Code: **1570**

CPT code: **82610**

## References

Buehrig CK, Larson TS, Bergert JH, et al: Cystatin C is superior to serum creatinine for the assessment of renal function. J Am Soc Nephrol 2001;12:194A

Grubb AO: Cystatin C - properties and use as a diagnostic marker. Adv Clin Chem 2000;35:63-99