

NAG (N-Acetyl- β -D Glucosaminidase), Urine

Analyte: N-acetyl- β -D-glucosaminidase

Specimen Type: Urine (addition of stabilizer recommended); please contact PBI for collection instructions

Optimum Volume: 0.5 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
2 weeks	3 weeks	6 months

Reporting Units: U/L; U/mmol of creatinine (normalized)

Method: Colorimetric

Biological or Clinical Significance:

N-acetyl- β -D-glucosaminidase (NAG) is a lysosomal enzyme present in proximal tubular cells. It specifically cleaves N-acetyl-glucosamine from larger precursors. It has a molecular weight of approximately 200 kD and is composed of four 50 kD subunits. Its relatively high molecular weight precludes filtration at the glomerulus and it is rapidly cleared from the circulation by the liver. Thus, urinary NAG originates primarily from the proximal tubule, and increased urinary excretion is a consequence of renal tubular cell breakdown. Urinary concentration of NAG is a sensitive index of renal tubular function. When proximal tubular cells are injured as the result of any disease process including, glomerular proteinuria, nephrolithiasis, hyperglycemia, interstitial nephritis, transplant rejection, or nephrotoxic agents such as antibiotics, anti-epileptics, or radio-contrast agents, the urine level increases and thus is used as a reflection of proximal tubular cell necrosis. Successive measurements of urinary NAG during the longitudinal patient follow-up may enhance its clinical utility as an indicator of ongoing tubular injury.

Principle of Test Method:

The uNAG assay is an automated colorimetric method. uNAG is reported as a normalized ratio to urinary creatinine in order to account for variations in urine flow rate. Therefore uNAG and urine creatinine are preferably tested from the same aliquot.

References:

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3. Loeb WF, Das SR, Trout JR. The effect of erythritol on the stability of gamma-glutamyl transpeptidase and N-acetyl glucosaminidase in human urine. Toxicol Pathol. 1997;25:264-267.
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5. Manley SE, Burton ME, Fisher KE, Cull CA, Turner RC. Decreases in albumin/creatinine and N-acetylglucosaminidase/creatinine ratios in urine stored at -20°C. Clin Chem 1992; 38:2294-2299.