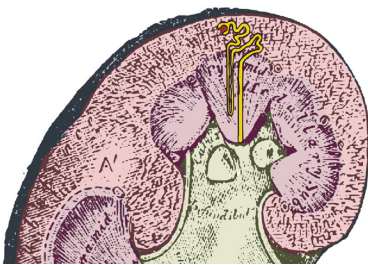


Urine RBP4: the best biomarker of renal proximal tubule function



Impaired tubule function is found in many acquired and hereditary diseases and this is usually not detected by conventional measures of kidney disease, such as glomerular filtration estimated by serum creatinine. Grossly

impaired tubule function can be present, and cause clinical problems, even when glomerular filtration is 'normal'. Until recently clinical measurement of renal tubule function has been difficult.

Assay of urine retinol-binding protein 4 (uRBP4), now offers the best biomarker of the function of the proximal renal tubule.

Since plasma RBP4 filtered by the renal glomerulus is almost completely reabsorbed by the proximal tubules, levels in healthy urine are very low (<3 µg/mmol creatinine). Complete failure of this reabsorption increases this excretion 10⁴-10⁵-fold, causing uRBP4 levels of about 10 mg/mmol creatinine. This is likely the largest range of any tubular biomarker.

When the proximal renal tubule fails to reabsorb salts and water as well as filtered proteins such as RBP4 there is a renal 'Fanconi Syndrome'. However, most uRBP4 elevations due to tubule damage are seen without the salt, water and acid abnormalities. Failure of reabsorption of RBP4 and other filtered plasma proteins is also termed 'Tubular' or 'Low Molecular Weight' proteinuria. This distinguishes it from the 'Glomerular Proteinuria' of much chronic kidney disease.

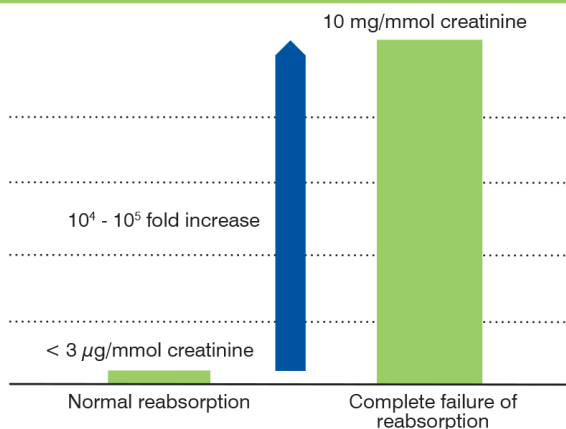
Urine RBP4 measurement helps clinicians and researchers enhance the care and study of number of patient groups;

- Acute Kidney Injury (AKI): uRBP4 is a very promising Biomarker that is now being explored
- All forms of renal Fanconi Syndrome: Hereditary and Acquired
- Monitoring for environmental renal toxins such as cadmium
- Detection of drug nephrotoxicity
- Disease and drug-related renal impairment in HIV disease
- Paraproteinemia such as myeloma, tubulointerstitial renal disease

uRBP4 is attractive to laboratories;

- It is probably the most sensitive biomarker of proximal tubular function
- It is relatively stable in urine
- Use of random (spot) urine collections has been clinically validated
- Transport-time to a central laboratory not critical
- The 5-log range diseases offers great potential diagnostic power
- There is a robust literature of clinical applications

Likely the largest range of any tubular biomarker



References:

1. Keith A. Burling, Pedro R. Cutillas, David Church, Marta Lapsley, Anthony G.W. Norden . Analysis of molecular forms of urine Retinol-Binding Protein in Fanconi Syndrome and design of an accurate immunoassay. Clinica Chimica Acta 413 (2012) 483–489
2. Anthony G.W. Norden, Marta Lapsley and Robert J. Unwin. Urine Retinol-Binding Protein in Nephrology. Advances in Clinical Chemistry, 2013 In preparation.

Ordering Information:

MONOCLONAL ANTIBODIES

MAb	Cat #	Specificity	Subclass	Application
RB42	2-RBP4	Retinol-binding protein 4 (RBP4)	IgG1	EIA, WB
RB48	2-RBP4	Retinol-binding protein 4 (RBP4)	IgG1	EIA, WB

Ordering Information:

ANTIGENS

Product	Cat #	Purity	Source
Retinol-binding protein 4 (RBP4) from human plasma, free	8-RBP4-f	>95%	Human Plasma
Retinol-binding protein 4 (RBP4) from human plasma, complexed with prealbumin	8-RBP4-c	>95%	Human Plasma

