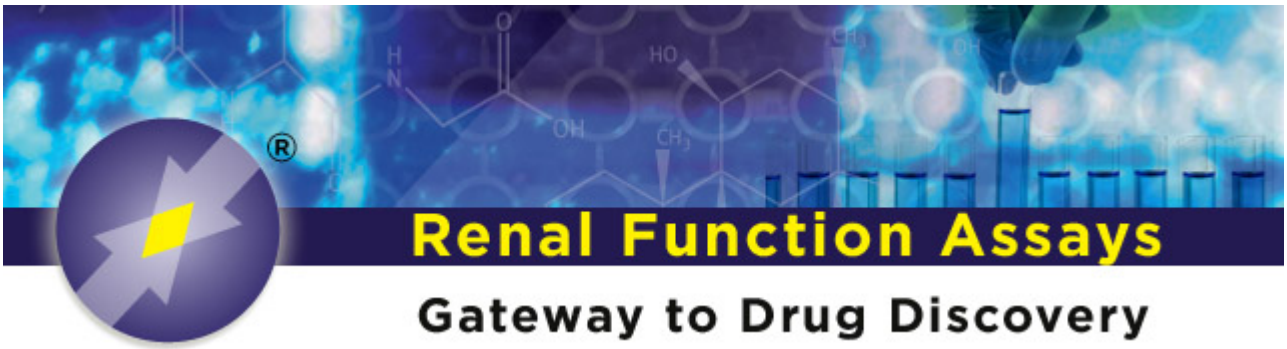


ARBOR ASSAYS

KIT MANUALS & INFORMATION:

DetectX® Serum Creatinine Detection Kits

Two Plate Kit:
Catalog No. KB02-H1

Four Plate Kit:
Catalog No. KB02-H2

Calibrated to the NIST Standard

DetectX® Urea Nitrogen Detection Kit

Two Plate Kit:
Catalog No. K024-H1

Calibrated to the NIST Standard

DetectX® Urinary Creatinine Detection Kits

Two Plate Kit:
Catalog No. K002-H1

Ten Plate Kit:
Catalog No. K002-H5

Calibrated to the NIST Standard

DetectX® Urinary RBP

Drug induced renal injury is common and well documented. ß-Lactam antibiotics, bisphosphonates, non-steroidal anti-inflammatory drugs, diuretics, aminoglycoside antibiotics, antineoplastic agents and radiocontrast agents are all contributing factors in tubular injury and potential renal failure. In June 2008, the US Food and Drug Administration (FDA) and European Medicines Agency (EMEA) considered additional test results to assess new drug safety[1]. These new voluntary recommendations specify that if the biomarker data is collected, the FDA will require it as part of the safety evaluation. The new test recommendations were developed by the Predictive Safety Testing Consortium (PSTC) whose members included scientists from 16 pharmaceutical companies.

The number and choice of markers for investigating renal injury have increased over the last decade. Most causes of renal dysfunction relate to impairment of glomerular filtration or tubular reabsorption. The daily urinary output is related to the glomerular filtration rate (GFR) that is dependent upon the circulation flow rate. True measurements of GFR rely upon the clearance (and subsequent measurement) of molecules such as inulin or radioactive tracers given to the patient. Estimated Glomerular Filtration Rate (GFR) is one of the best indices of renal function. In practice, creatinine clearance or estimates of creatinine clearance based on the serum creatinine are used to measure GFR. Creatinine is produced naturally by the body and is freely filtered by the glomerulus. There are a number of formulae that estimate GFR and the National Kidney Foundation has a useful calculator (and extensive references) for calculation of GFP (http://www.kidney.org/professionals/kdoqi/gfr_calculator.cfm).

EIA Kit

One Plate Kit:
Catalog No. KU04-H1

DetectX® Cystatin C EIA Kit

One Plate Kit:
Catalog No. K012-H1

DetectX® Direct Cyclic AMP EIA Kits

One Plate Kit:
Catalog No. K019-H1

Five Plate Kit:
Catalog No. K019-H5

DetectX® Direct Cyclic AMP CLIA Kits

One Plate Kit:
Catalog No. K019-C1

Five Plate Kit:
Catalog No. K019-C5

World's Most Sensitive

DetectX® Glutathione Fluorescent Detection Kits

One Plate Kit:
Catalog No. K006-F1

Five Plate Kit:
Catalog No. K006-F5

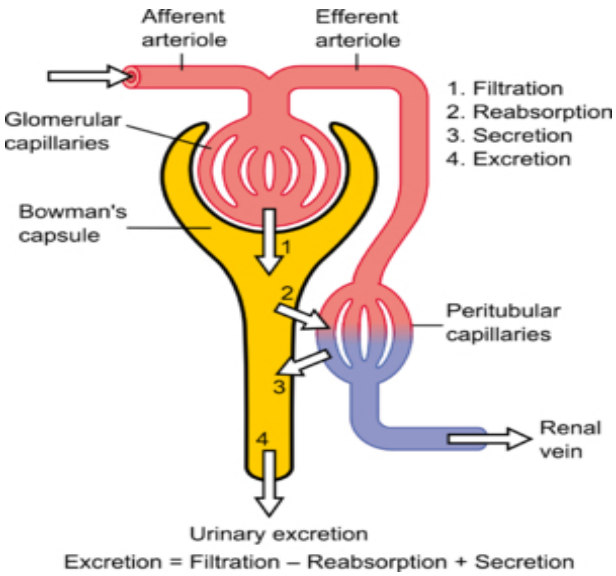
World's Most Sensitive

DetectX® Glutathione Colorimetric Detection Kit

Four Plate Kit:
Catalog No. K006-H1

DetectX® Nitric Oxide Detection Kit

Two Plate Kit:
Catalog No. K023-H1



Other markers such as Blood Urea Nitrogen (BUN) are often used in conjunction with serum creatinine tests. Azotemia, poor kidney function, will cause elevated BUN levels and is associated with acute kidney failure or injury. Urea is a by-product of protein metabolism by the liver, and is therefore removed from the blood by the kidneys. Unlike creatinine, urea freely filters through the glomerulous, but is reabsorbed by the renal tubules in a flow-dependent fashion. The higher the flow rate, the greater amount of urea nitrogen is cleared from circulation and eliminated through the kidneys. As a result, the level of circulating urea nitrogen, along with serum creatinine, serve as primary measures of kidney function.

However, not all types of renal injury result in a change in GFR. In order to identify renal injury earlier, highly specific biomarkers are being identified; such as, those molecules that relate to the biological response of ischemic or nephrotoxic injury[2]. These include released enzymes such as Cystatin C, both serum and urinary Retinol Binding Protein (RBP), Neutrophil Gelatinase-associated Lipcalin (NGAL), Glutathione S-transferase (GST), and Alkaline Phosphatase (AP), proteins such as Kidney Injury Molecule-1 (KIM-1), albumin or ß2-microglobulin, as well as inflammation-related markers such as Thromboxane B_2 (TXB_2), Interleukin-18 (IL-18), and Prostaglandin E_2 (PGE_2)[3-5].

1. http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2008/ucm116911.htm

2. Waikar, SS. et al. “Diagnosis, epidemiology and outcomes of acute kidney injury”. Clin.J.Am.Soc.Nephrol. (2008) 3:844-861.

3. Waikar, SS and JV Bonventre. “Biomarkers for the diagnosis of acute kidney injury”. Neph.Clin.Pract. (2008) 109:c192-c197.

4. Maddens, BEJ, et al. “Validation of immunoassays for the candidate renal markers C-reactive protein, immunoglobulin G, thromboxane B2 and retinal binding protein in canine urine”. Vet.Immunol.Immunopath. (2010) 134:259-264.

5. Semedo, FCQ, et al. “Modulation of inflammatory response by selective inhibition of cylooxygenase-1 and cyclooxygenase-2 in acute kidney injury”. Inflamm.Res. (2010) 59(3):167-175.