Millipore®

Preparation, Separation,
Filtration & Monitoring Products

MERCK

From Compound to Drug

Streamline your toxicity testing with MILLIPLEX® multiplex assays

Toxicity studies are critical when it comes to evaluating drug safety and how the drug molecule interacts with key organs. MILLIPLEX® multiplex assays empower researchers to study multiple toxicity biomarkers across organs in multiple species.

MILLIPLEX® toxicity assays are based on Luminex® xMAP® technology and cover a range of species and organ-specific markers to help you with your toxicity studies spanning various applications including drug discovery, drug-induced toxicity, dose-ranging, and environmental sample testing (endocrine disruptor chemicals, EDC) studies. MILLIPLEX® toxicity assays come with the same quality promise as other MILLIPLEX® assays and are compatible with all the existing xMAP® platforms including the xMAP® INTELLIFLEX® instrument.

MILLIPLEX® Multiplex Toxicity Assays

We offer 17 toxicity panels spanning 4 different species and 3 different organ types which can be run with various sample types including plasma, serum, and urine. Toxicity assays are supplied in an "all-in-one" format that has all the necessary reagents you need to run your assay.

Kit Contents:

- Quality controls (QCs) provided to qualify assay performance
- Comparison of standard (calibrator) and QC lots to a reference lot to ensure lot-to-lot consistency
- Optimized serum matrix to mimic native analyte environment
- Detection antibody cocktails designed to yield consistent analyte profiles within the panel

Organ-Specific Analysis

Our toxicity assays cover all the vital organs and analytes identified by the Predictive Safety Testing Consortium (PSTC) as important biomarkers for detecting organ-specific toxicity. These panels can be used individually or in a group to study drugs in a preclinical setup to assess drug safety in the drug development process.

Kidney Toxicity

Kidney toxicity is a primary reason for drug failure during the development phase. Therefore, analyzing biomarkers that play a role in nephrotoxicity is crucial as nephrotoxic drugs can lead to inflammation in the glomerulus, proximal tubules, and other surrounding cellular matrices. MILLIPLEX® kidney toxicity assays can simultaneously quantify key analytes approved by the PSTC.

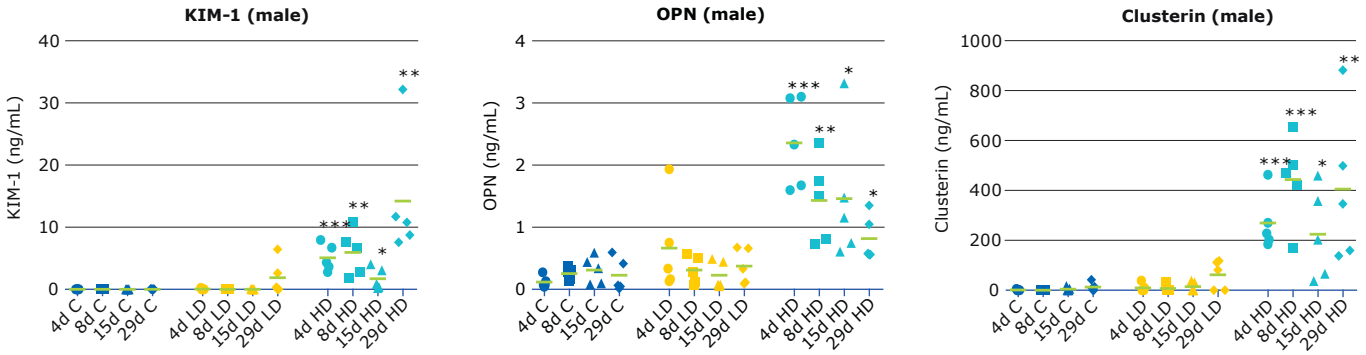

Figure 1. Significant changes in urinary Kidney Injury Molecule-1 (KIM-1), Osteopontin (OPN), and Clusterin levels were detected on Day 4 of analysis through MILLIPLEX® toxicity panels, demonstrating a higher sensitivity and specificity of these novel urinary protein biomarkers compared to the classic BUN and Serum Creatinine measurements.

The Life Science business of Merck operates as MilliporeSigma in the U.S. and Canada.

Liver Toxicity

The liver is the most common organ for drug toxicity studies as it is the site where most drugs are metabolized and excreted. Drug-induced liver injury (DILI) is the primary adverse event resulting in drug withdrawal from the market. Our MILLIPLEX® liver injury panels can simultaneously quantify multiple key analytes in serum and plasma samples.

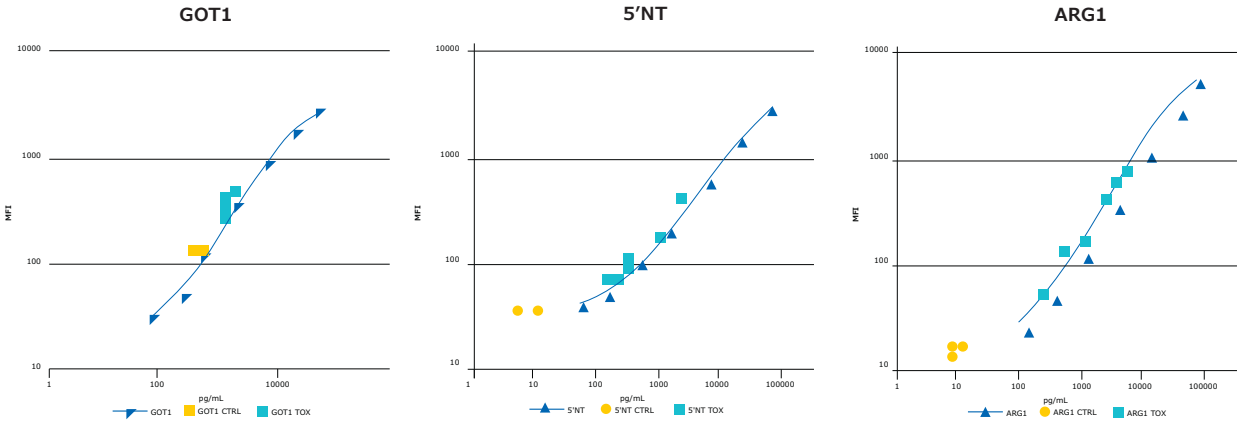

Figure 2. Liver-type arginase 1 (ARG1), Glutamic-oxaloacetic transaminase 1 (GOT1), and 5′nucleotidase (5'NT) concentrations were elevated in a rat acetaminophen liver injury model. Before ("CTRL") and 24 hours post-dosing ("TOX"), ~250 µL of blood was collected and plasma samples were prepared from each rat. The MILLIPLEX® Rat Liver Injury Panel was used to quantify blood protein concentrations.

miRNA-Based Liver Toxicity Biomarker Analysis

To complement our portfolio of MILLIPLEX® liver injury panels, we offer a unique way to analyze microRNA (miRNA). miR122, a novel miRNA-based liver toxicity biomarker, is an early marker for DILI, Hepatitis B, and some forms of hepatocellular carcinoma. This Single Molecule Counting (SMC®) technology-based assay gives you the advantage of early and ultrasensitive toxicity detection compared to the traditional enzyme and PCR-based markers. In addition, it does not require any kind of sample preparation, PCR amplification, or cDNA synthesis.

Contact your local sales representative to learn more about this exciting technology.

Cardiac Toxicity and Vascular Injury

Cardiotoxicity can arise from multiple factors including cancer drugs such as cytostatic drugs and alkylating agents. Similarly, vascular injury is damage to the vascular wall that can be caused by direct drug-induced toxicity, immune-mediated injury of the endothelium, or altered hemodynamic forces. MILLIPLEX® cardiotoxicity and vascular injury panels are available for rat species and can be used with serum and plasma samples.

Read more about how MILLIPLEX® multiplex toxicity panels are being used to study drug toxicity markers using animal models at **SigmaAldrich.com/milliplex-toxicity**.

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Not For Use In Diagnostic Procedures.

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