ABSTRACT
Drug toxicity can result in major organ damage to the kidneys. The traditional methods for monitoring drug-induced nephotoxicity in toxicology studies include measurement of serum creatinine and blood urea nitrogen levels, but in recent years, more sensitive kidney biomarkers have emerged. The PCK rat is a recently identified model of polycystic kidney disease that can be used as a model for general kidney disease or damage. We measured TIM-1/KIM-1/HAVCR, FABP1/L-FABP, Lipocalin-2/NGAL, Cystatin C, and Osteopontin in serum and urine from normal (Sprague Dawley®) and PCK rats using the Fluorokine® MAP Rat Kidney Toxicity Panel and observed a significant increase compared to conventional ELISAs. Five biomarkers can be measured in a user-defined multiplex using the Rat Fluorokine MAP Kidney Toxicity Panel. The assay is fully validated for accuracy, precision, and reproducibility in rat serum, plasma, and urine.

RESULTS

The Rat Fluorokine MAP Kidney Toxicity Panel was rigorously tested in-house to ensure optimal assay performance for all analytes and sample types. The assay uses bead-based multiplex immunoassays designed for use with the Luminex® 100 and Luminex® 200. The panel is intended for use with serum, plasma, or urine samples. The assay is used to measure the levels of TIM-1/KIM-1/HAVCR, FABP1/L-FABP, Lipocalin-2/NGAL, Cystatin C, and Osteopontin in a single serum, plasma, or urine sample. The panel is easy to use and allows for the measurement of multiple analytes simultaneously with less user time, less sample volume, and a lower cost per analysis.

A commercial multiplex immunoassay kit for the measurement of kidney biomarkers was used to test the panel. The kit was used to measure the levels of TIM-1/KIM-1/HAVCR, FABP1/L-FABP, Lipocalin-2/NGAL, Cystatin C, and Osteopontin in a single serum, plasma, or urine sample. The panel was used to measure the levels of TIM-1/KIM-1/HAVCR, FABP1/L-FABP, Lipocalin-2/NGAL, Cystatin C, and Osteopontin in a single serum, plasma, or urine sample.

CONCLUSIONS

• Significant increases were observed in the levels of TIM-1/KIM-1/HAVCR and Lipocalin-2/NGAL in serum from the PCK rat compared to normal rat serum. A significant decrease was observed in the level of FABP1/L-FABP in serum from the PCK rat compared to normal rat serum.
• Significant increases were observed in the levels of TIM-1/KIM-1/HAVCR and Osteopontin in urine from the PCK rat compared to normal rat urine. Significant decreases were observed in the levels of FABP1/L-FABP, Lipocalin-2/NGAL, and Cystatin C in urine from the PCK rat compared to normal rat urine.
• The Rat Fluorokine MAP Kidney Toxicity Panel is a fully validated bead-based multiplex assay that generates accurate, precise, and reproducible results.
• The Rat Fluorokine MAP Kidney Toxicity Panel is an excellent tool for drug toxicology studies because it can simultaneously assess the levels of FABP1/L-FABP, Lipocalin-2/NGAL, TIM-1/KIM-1/HAVCR, Cystatin C, and Osteopontin in a single serum, plasma, or urine sample.
• The Rat Fluorokine MAP Kidney Toxicity Base Kit can be combined with any combination of the five analyte-specific bead sets for greater flexibility in experimental design.

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REFERENCES