Biomarkers for the Diagnosis of Human Kidney Injury

**Background:** Acute Kidney Injury (AKI) is common and affects 45 percent of critically ill patients and 20 percent of hospitalized patients. This results in increased hospital stays, infectious complications and increased mortality at significant cost. The current standard for diagnosis of AKI relies on the measurement of the increased Serum Creatinine (SCr) level as a result of kidney injury. Creatinine, however, is a poor biomarker for kidney injury as its concentration in serum is affected by age, race, sex, muscle mass, diet, and use of medication. Importantly, the increase of the SCr may take hours after injury, while after 12 hours already 50% of the kidney function may be lost. This makes SCr determination nonspecific and insensitive. In addition, existing enzymatic methods and the alkaline picrate assay to determine SCr lack in precision due to interference of other substances present in serum. Hence, there is a pressing need for a real-time, specific, and sensitive AKI biomarker that broadens the time frame for therapeutic intervention.

**Technology Description:** Researchers at Washington University in St. Louis have developed antibodies against several human kidney injury biomarkers including Myo-Inositol Oxygenase (MIOX). These biomarkers will be used as an immunodiagnostic set to detect human kidney injury using blood or urine samples. Using an animal model of kidney transplantation, the researchers demonstrated that the serum MIOX concentration is elevated following transplantation and correlates with the presence of histologic tissue damage. Additionally, preliminary data of the MIOX immunoassay shows elevated expression in plasma collected from critically ill patients with AKI and precedes the increase in SCr. This makes the invention most useful for the identification, risk stratification, and monitoring of patients with kidney injury. This assay also enables the monitoring of renal toxicity effects of pharmaceuticals or intravenously administered contrast agents.

**Key Advantages:**
- There is no commercially available immunoassay for these kidney specific biomarkers
- Both blood or non-invasive urine samples can be used
- Enables early diagnosis of AKI
- No interference from other substances in the serum
- Animal and human data


**Patent:** Patent application US20160216264A1: Miox antibody and assay

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**Application Space**  
Acute Kidney Injury Biomarkers, Myo-Inositol Oxygenase, Serum Creatinine

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