

# Development of Biomarker Panel and Methods to Monitor Kidney Health

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## BACKGROUND

It has been shown that intensive BP lowering results in higher blood creatinine, which is typically indicative of decreased kidney function, thereby causing physicians concern that the patient is suffering from kidney damage. However, an increase in blood creatinine levels may also be due to changes in blood flow, a hemodynamic effect that is benign to the patient.

Sodium glucose transporter 2 (SGLT2) inhibitors are a relatively new class of drugs for treating type 2 diabetes, which have been shown to result in lower risk for progression to dialysis in long-term follow-up. However, when patients first begin a therapeutic regimen of SGLT2 inhibitors, they typically experience an acute change in blood flow to the kidney, which results in a rise in serum creatinine. This causes concerns to practitioners that the drug may be harming the kidneys, rather than being beneficial long term. While some patients may indeed experience intrinsic kidney damage due to marked reductions in blood flow, resulting in cessation of SGLT2 inhibitor therapy and the benefit associated therewith, there is currently no way to differentiate between these two patterns of creatinine change. Thus, a need exists for diagnostic test to differentiate intrinsic kidney damage from hemodynamic changes in patients taking SGLT2 inhibitors for diabetes mellitus.

## TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have an invention that is based on a discovery of a number of biomarkers that can differentiate between hemodynamic changes in serum creatinine from intrinsic kidney damage in patients taking SGLT2 inhibitors for diabetes mellitus. The present invention provides methods for monitoring kidney health using a panel of biomarkers in a subject undergoing treatment for diabetes mellitus where the therapeutic regimen results in increased levels of blood creatinine.

## APPLICATIONS

The present invention provides a panel of 8 biomarkers for use in diagnosing and/or monitoring kidney health. Moreover, the present invention provides methods for predicting an adverse health condition in a subject undergoing a therapeutic regimen for diabetes mellitus.

## ADVANTAGES

The discovery of 8 biomarkers to assess kidney health that can distinguish hemodynamic from intrinsic kidney changes especially in regards to monitor diabetic patients taking SGLT2 inhibitors for the first time.

## STATE OF DEVELOPMENT

The method includes measuring the levels of biomarkers in a biological sample from the subject and comparing the measured levels against reference levels obtained from a control subject. In various embodiments, an increase in the measured levels as compared to the control levels is indicative of intrinsic kidney damage and progression to chronic kidney disease (CKD) in the subject and the treatment for diabetes mellitus should be discontinued and/or the subject should be administered an alternative therapeutic regimen.

## INTELLECTUAL PROPERTY INFO

The invention is patent-pending and is available for licensing and collaborations.

## RELATED MATERIALS

## PATENT STATUS

Patent Pending

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## OTHER INFORMATION

### KEYWORDS

diabetes mellitus, biomarkers, Sodium glucose transporter 2, intrinsic kidney damage, serum creatinine

### CATEGORIZED AS

- ▶ **Medical**
  - ▶ Diagnostics
  - ▶ Disease: Kidneys and Genito-Urinary System

### RELATED CASES

2019-155-0

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