

Diagnostic Method and Biomarker for Detecting Renal Insufficiency

Introduction

Renal disease, either acute or chronic, progresses towards endstage renal disease and ultimately death. Chronic renal insufficiency causes the loss of the physiological function of the kidney. The loss of renal function is characterized by uremia or the retention of nitrogenous products in blood. Acute renal insufficiency is called acute kidney failure. Both types of kidney failure can have several causes, different outcomes and prognosis.

In recent years the incidence of chronic renal insufficiency has incremented considerably in the developed world.

Currently there are no effective therapies for acute kidney failure, nor are there reliable biomarkers to assess renal function. For acute kidney failure there are no efficient therapies, nor are there reliable biomarkers to assess renal function.

The current methodologies using creatinine or urea as biomarkers to evaluate renal function are not accurate for early detection of acute renal failure. The current objective is focused on early detection and prompt treatment in order to improve the final outcome of the condition.

Invention

The invention is a diagnostic method and a biomarker for the detection of renal insufficiency (acute as well as chronic renal failure). The rationale of the invention is that the decrease in renal functions is accompanied by a significant increase in urinary PTHrP excretion.

The method consists of the quantification (Western blot) of Parathyroid hormone-related protein (PTHrP) in a urinary sample, comparing it with a reference value in normal subjects. Higher urinary PTHrP levels are related to renal insufficiency. Moreover, the Urinary excretion of the biomarker PTHrP can be considered a measure of renal function.

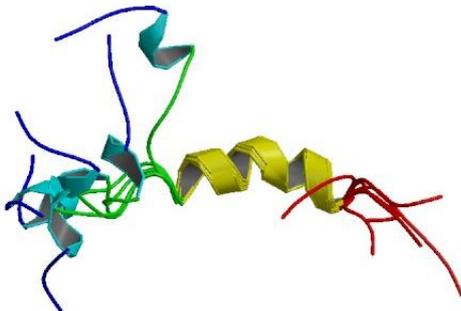


Figure: Structure of human parathyroid hormone-related protein (PTHrP).
Source: The Protein Data Bank

State of Development

The diagnostic method is tested on rodents and humans.

Advantages

- The Urinary excretion of the biomarker PTHrP can be considered a measure of renal function.
- The test is done with a urine sample; therefore an invasive extraction of biological matter is not necessary.
- It permits an early diagnosis of both acute renal failure and chronic renal insufficiency.

Application

The diagnostic method has a clinical application. The conditions diagnosed with this biomarker are both acute as well as chronic renal insufficiency including secondary chronic renal insufficiency due to diabetic nephropathy, glomerulonephritis or nephrosclerosis.

Market Potential

Currently there are no efficient therapies against acute kidney failure and it is one of the main causes of mortality in hospitalized patients. Around 5% of hospitalized patients and 30% of intensive care patients suffer from acute kidney failure. The annual incidence is about 400 cases per million among the general population. Moreover, there is a lack of efficient and reliable biomarkers for the diagnosis of the aforementioned conditions.

IPR Position

Patent application number P201131506.

Inventors

Ricardo Bosch Martínez, Arancha Ortega de Mues from the University of Alcalá, Jordi Bover Sanjuán from Fundació Puigvert and Alberto Lázaro Fernández and Alberto Tejedor Jorge from the *Hospital General Universitario Gregorio Marañón*.

Opportunity

The diagnostic method is available for licensing.

Contact:

Tatiana García
+34 914269279

innovacion@iisgm.com

Unidad de Apoyo a la Innovación

www.iisgm.com/innovacion