Transdermal, Continuous, Measurement of Renal Function

MediBeacon’s system is used to monitor measured Glomerular Filtration Rate (mGFR) in the preclinical setting. The device is placed on the animal's body. It allows researchers to calculate and track the animal's kidney function over time without requiring the animal to be restrained during monitoring.

Determination and monitoring of mGFR is essential for various preclinical studies, e.g. characterization of renal function, assessment of new and existing kidney therapeutics, evaluation of nephrotoxicity, discovery of novel chemical or medical agents, and fundamental understanding of kidney function. However, the research standard for measuring renal function has traditionally required several blood draws as a function of time and subsequent sophisticated laboratory analysis to measure tracer agent concentrations in each blood sample. This methodology using blood and/or urine sampling is not only labor-intensive but also puts a strain on the animal.

Utilization of the MediBeacon device and a fluorescent tracer agent is independent of blood sampling, urine collection, and laboratory assays and thus enables streamlined preclinical trial design and execution.

Successful Use in Nephrology Research

MediBeacon technology is used by leading medical schools, academic centers, research institutes, and pharmaceutical companies worldwide to enhance preclinical assessment of kidney therapeutics, evaluate nephrotoxicity, and gain fundamental understanding of kidney function in animals.

Research using the MediBeacon preclinical product has been featured in numerous posters presented at previous American Society of Nephrology (ASN) Kidney Week meetings. In all there are over 50 published studies in which this transdermal mGFR technique was used (peer reviewed and conference abstracts).

Key Advantages*

- System can be used in conscious freely moving mice, rats, and larger animals.
- Longitudinal measurements of GFR in the same animal are possible.
- Changes of GFR can be observed earlier compared to endogenous markers.
- Streamlined specimen-free trial design and execution are the result.

*Technique is similar to the system currently in human clinical studies.

System

- Device and Patch are Affixed to Animal.
- Fluorescent Tracer Agent is Administered.(a)(b)
- Software Analyzes Data from the Device.

(a) NOT FOR HUMAN USE
(b) The Fluorescent tracer agent is administered IV into the animal.

This device is not approved for human use.
MediBeacon’s mission is to commercialize biocompatible optical diagnostic agents for physiological monitoring, surgical guidance, and imaging of pathological disease. Several product concepts in these arenas are contained in the MediBeacon Intellectual Property estate. MediBeacon’s portfolio includes a renal function system that uses an optical skin sensor with a proprietary fluorescent tracer agent that glows in the presence of light. This system, currently in human trials is designed to provide clinicians continuous real-time monitoring of a patient’s kidney function.

The company’s product for the preclinical market, which is the size of a small coin, enables detection of a GFR fluorescent tracer agent and hence the determination of kidney function. Use of MediBeacon fluorescent tracer agents in preclinical animal research provides researchers with a product that is similar to what is currently in human clinical studies.

Preclinical Device - Technical Specifications

The instrument contains light emitting diodes capable of exciting the fluorescent tracer agent and a photodiode that collects the emission light.

After amplification and digitization, the data sets are either stored in the internal memory of the microcontroller (available for mice and rats), or are transmitted to a host computer in real-time (only available for rats). When using the integrated storage the dataset is transferred to a PC via a USB connection for display and analysis.

The product is sold with batteries and both USB and wallcharger modules. Patches for use with laboratory animals as well as fluorescent tracer agents are sold separately.

(a) NOT FOR HUMAN USE
(b) For information regarding compatible fluorescent tracer agents contact us at sales@medibeacon.com.

About MediBeacon

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MediBeacon Clinical Study Transdermal GFR Monitor Tracer Agent and Monitor Not Yet Approved for Sale

Fluorescent Tracer Agents Enabling Medical Innovations™