Continuous Analyte Sensor Device

Tech ID: 25886 / UC Case 2013-017-0

BRIEF DESCRIPTION

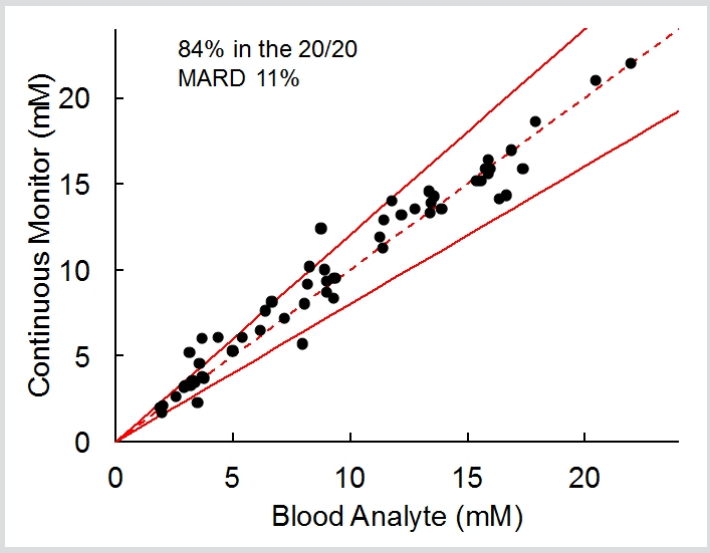
Researchers at UCI have developed an implantable medical device for monitoring patient analytes. One application for the device is to continuously measure analytes and oxygen in trauma patients. This biosensor affords rapid and accurate continuous measurements of molecules critical for assessing patient status in clinical settings. This device may also be adapted to measure other analytes, such as glucose, for long-term disease management.

FULL DESCRIPTION

Measurement of analytes in the body, such as oxygen, carbon dioxide, sugars, and metabolic products, is critical for physicians to assess a patient's medical status and determine treatment options. Several commercial systems exist for measuring medical analytes in a hospital or lab setting. These systems use bench-top instruments that sample blood or other biological fluids at discrete time points. For many medical conditions, however, a *continuous* measurement of analytes would provide real-time dynamic information that may better assist a physician or patient in making treatment decisions.

Researchers have developed a platform technology to continuously measure the concentration of multiple analytes *in vivo*. This invention is a small (less than 1 mm) biosensor probe that is implanted under a patient's skin, producing rapid, continuous measurements using optically-active dyes or enzymes inside the device. The probe can wirelessly transmit measurement results to allow for hands-off access to real-time information of the analyte of interest. . Analytes that this technology can measure include glucose, lactic acid, ketones, oxygen, carbon dioxide, and more. The ability to measure these dynamic molecules in the body in a real-time, accurate method will provide healthcare professionals better information for making improved medical decisions.

The figure below demonstrates the ability of our continuous analyte monitor to accurately detect a specific analyte when compared to a blood sample.



STATE OF DEVELOPMENT

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OTHER INFORMATION

KEYWORDS

biosensor, trauma, analyte, monitor, lactic acid, glucose

QUICKSTART LICENSING

This technology is available through the UC QuickStart program for startups.

CATEGORIZED AS

» **Biotechnology**

Acellular studies were completed to confirm the sensor's ability to respond in real-time to analytes in a buffer solution.

In vivo (rat and rabbit) studies were also performed. The implanted device successfully measured accurate, real-time analyte concentrations in the blood in response to a stimulus. Results were compared against commercial devices using drawn blood.

A human clinical study has been completed with a first prototype device to demonstrate the sensor's ability to accurately track analyte measurements with those obtained by a standard blood draw.

Human clinical studies will be repeated with a miniaturized second generation prototype of the device.

FEATURES/BENEFITS

- In-body analyte sensor for diagnostic and therapeutic applications
- Improved medical monitoring capabilities
    - o The implanted biosensor gives real-time, rapid, and accurate results of analytes in the body
    - o Can be employed for short-term (i.e. hospital) or long-term (i.e. chronic illness) management
- More convenient and comfortable method for patients and physicians
    - o Eliminates the need for frequent blood draws
    - o Requires only one minimally-invasive out-patient procedure (implantation of the small device under the skin)
- Can be used to simultaneously measure glucose, carbon dioxide, and more.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,750,985	08/25/2020	2013-017
United States Of America	Published Application	20210315492	10/14/2021	2018-238
Patent Cooperation Treaty	Reference for National Filings	WO 2023/039393	03/16/2023	2022-716

Additional Patent Pending

» Health

» **Medical**

» Devices

» Diagnostics

» Disease: Infectious Diseases

» **Sensors & Instrumentation**

» Biosensors

» Medical

RELATED CASES

2013-017-0, 2018-238-0, 2022-716-0

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