Photoacoustic Spectroscopy Detection Of HFA, NO, And C02 From Exhaled Breath

Tech ID: 32173 / UC Case 2019-386-0

BRIEF DESCRIPTION

UCI researchers introduced a medical device which simultaneously detects hydrofluoroalkane (HFA), carbon dioxide (CO2), and nitrogen monoxide (NO) in exhaled breath for monitoring and improving treatment of asthma and chronic obstructive pulmonary disease (COPD).

SUGGESTED USES

·Rapidly detects HFA, CO2, and NO

·Provides valuable information on delivery of inhaled medications

·Facilitates physician monitoring of patient-specific results

·Guides appropriate training and treatment levels for asthma and COPD patients

FEATURES/BENEFITS

·Detection of biomarkers using photoacoustic spectroscopy

·Fast, efficient, and accurate readings

·Sensitivity down to 10-3 ppm

·Simultaneous measurement of the three gases

·Results directly correlate with amount of medication delivered

·Compact and portable device, suitable for clinical use

·Integration with cloud data services for ease of physician access

FULL DESCRIPTION

Asthma and chronic obstructive pulmonary disease (COPD) are among the top six causes of death in the world. These deaths are prevalent because asthma management and the efficacy of metered dose inhalers are insufficient.Physicians must estimate treatment decisions, such as whether to increase or decrease a prescribed dosage, without guidance from real data. Furthermore, asthma and COPD patients do not know how much of the drug they have inhaled and therefore cannot accurately communicate their dosages to their physicians. There is currently no reliable method to determine the efficacy of administering pulmonary drugs through respiratory gas intake.

UCI researchers introduce a medical device which simultaneously detects hydrofluoroalkane (HFA), carbon dioxide (CO2), and nitrogen monoxide (NO) in exhaled breath. HFA is used for delivery of medication in metered-dose inhalers, and detection of HFA in breath directly correlates with the amount of medication

CONTACT

Alvin Viray
aviray@uci.edu
tel: 949-824-3104.



INVENTORS

» Cooper, Dan M.

OTHER INFORMATION

CATEGORIZED AS

» **Medical**
» Devices
» Disease: Respiratory and Pulmonary System
» Imaging
» **Sensors & Instrumentation**
» Medical
» Physical Measurement

RELATED CASES

delivered. CO2 and NO are biomarkers of asthma and COPD, whose levels can be used to assess the disease. These gases are detected using photoacoustic spectroscopy, which measures the concentration of matter given by the acoustic waves produced by the exposure of the matter to light. This method allows for high detection sensitivity and rapid, quantitative measurements in a compact and portable device for clinical benefit to manage asthma and COPD.

2019-386-0

STATE OF DEVELOPMENT

This technology is still in the concept stage. The researchers plan to manufacture components for the device to assemble and test a prototype (~3 months). The device will then be used for patient testing after receiving IRB approval (~2 months). A minimum viable product will be developed by 2020 for FDA submission.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,397,177	07/26/2022	2019-386

UCI Beall Applied Innovation

5270 California Avenue / Irvine,CA
92697-7700 / Tel: 949.824.2683

© 2020 - 2022, The Regents of the University of California
Terms of use
Privacy Notice