Analytical Instrumentation, Methods & Materials

Microfluidic Device for Drug Delivery

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WARF: P04240US

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a microfluidic drug delivery device.

Overview

Oral ingestion of pharmaceuticals is considered the safest, most convenient and most economical method of administering drugs. However, many pharmaceuticals cannot be delivered orally because they are too large or too electrically charged to pass through the small intestine into the bloodstream, or because they are unable to withstand the environment of the digestive tract.

The Invention

As an alternative to oral administration, UW-Madison researchers have developed a microfluidic device for delivering a steady infusion of a drug through the skin. The device may take the form of a thin, transcutaneous patch that can be worn for extended periods of time. The device includes a reservoir for storing the drug, and a valve that connects the reservoir to an output needle inserted into the patient's skin. A pressure source causes the drug to flow from the reservoir to the needle. The key advantage of this design is that the valve can move between the open and closed positions in response to a predetermined condition in the patient's physiological fluids, providing autonomous control of drug flow.

Applications

- Treatment of diseases such as diabetes

Key Benefits

- Delivers a steady infusion of pharmaceuticals to a patient as needed
- Delivery is autonomously controlled.
- Allows closed loop regulation based on physiological signals
- Neither under-medicates nor over-medicates the individual
- Simple to use
- Inexpensive to manufacture

Additional Information

For More Information About the Inventors

- David Beebe
- Michael MacDonald

Related Intellectual Property

- View Continuation Patent in PDF format.

Tech Fields

- Analytical Instrumentation, Methods & Materials : Microfluidics
- Drug Delivery : Other drug delivery technologies
- Medical Devices : Other medical devices

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846