

Digital Pill: An Overview

Evanjali Pradhan

Department of Biomedical Engineering, Utkal University, Bhubaneswar, Odisha, India

EDITORIAL

A digital pill (sometimes called a smart pill or an ingestible sensor) is a medicinal dosage form that includes an ingestible sensor. After the sensor has been consumed, it begins communicating medical data. Digital medicine includes the technology that goes into the pill, as well as the data transmitted by the pill's sensor. The sensor's purpose is to assess whether or not the person is taking their prescription (called "compliance"). There are questions about who receives the data and what happens to it in terms of privacy. Imaging, sensing various types of gases, monitoring drug compliance or absorption, and electrochemical signal detection are the most typical uses for ingestible sensors.

When it comes to data transfer, images and video use the most bandwidth. Images of the macroscopic anatomy of hollow organs, such as the stomach and small bowel, are generated using ingestible capsules housing video cameras. Batteries power these devices, which can send video at up to 2.7 Mbit/s and are less invasive than previous endoscopic imaging systems. Gas Sensing Capsules use a gas-permeable membrane encircling an electrochemical gas sensor to measure partial-pressures of various gases produced as a consequence of metabolic reactions by bacteria in the intestines.

The presence of gases in the gut, such as carbon dioxide and

methane, gives significant information for analyzing metabolic and digestive health. When compared to the standard technique of breath-test analysis, this inside evaluation of a body's organs delivers a superior analysis in terms of precision and dependability. Ingestible sensors that are specifically designed to monitor medication absorption or compliance will also alert the user that medicine is required. pH changes trigger them in the stomach, and they broadcast via Bluetooth.

As a Gi tract diagnostic tool, voltammetry can be employed in vitro on stool liquid. The gadget would be capable of cyclic, square wave, and differential pulse voltammetry measurements. Electrolyte imbalances, body metabolism based on chemical makeup of saliva, hormonal imbalances, infectious illnesses such as HIV and viral hepatitis, allergy disorders, and cancer are the most common clinical objectives for the ingestible sensor in the oral cavity. Endoscopy uses digital pills with imaging capabilities to look for inflammation and lacerations in the esophagus. The mucosa of the esophagus can also be examined for problems like eosinophilic esophagitis. Certain varieties of digital pills can monitor the pH value of the stomach, which is vital for optimal digestion. A digital pill can also detect digestive enzymes and electrolyte production. These pills can also scan the body for specific microorganisms.

Correspondence to: Evanjali Pradhan, Department of Biomedical Engineering, Utkal University, Bhubaneswar, Odisha, India, E-mail: eva.sikha@gmail.com

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