

Electronic pill shows its smarts by measuring pH levels in digestive tract

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An electronic diagnostic tool called the SmartPill is swallowed by patients in order to take measurements as it travels through the gastrointestinal tract. A new study by physician-scientists at NewYork-Presbyterian/Weill Cornell Medical Center used the device in patients with mild to moderate ulcerative colitis (UC), determining that they have significantly more acidic pH in their colons, compared with the average person -- a finding that may impact treatment strategy.

The study was presented today at the Digestive Disease Week (DDW) meeting in Chicago, Ill.

"By using the SmartPill to measure the pH throughout the digestive tract, we were able to see how the pH levels can vary in patients with ulcerative colitis. This may help us understand why some drug treatments are more effective than others," says Dr. Brian Bosworth, lead investigator, assistant professor of medicine at Weill Cornell Medical College, and a Crohn's and colitis specialist at the Jill Roberts Center for Inflammatory Bowel Diseases at NewYork-Presbyterian Hospital/Weill Cornell Medical Center.

Mesalamines are the mainstay drug therapy for the induction and maintenance of remission in patients with mild to moderate UC. Their efficacy is dependent on how well the drug is delivered to the active site of the disease. Several mesalamines have a delivery system that is dependent upon a specific pH in order to release. However, since the pH levels in the GI tract can vary, the researchers say, this could impact the

proper release and efficacy of the medication.

In the study, five patients with mild to moderate [ulcerative colitis](#) (UC) and five healthy control patients swallowed the SmartPill. While all study participants reached a pH of 7, the UC patients reached this level more slowly than those without UC. Furthermore, the amount of time the colon maintained a pH greater than 6 or greater than 7 was less in the UC [patients](#). The majority of mesalamines dissolve at a pH greater than or equal to 7, however, there is a more recently approved medication that initiates release of mesalamine at pH greater than or equal to 6.

Administered in the physician's office, the SmartPill allows that patient to go about their normal routine during the course of the test. As the SmartPill Capsule passes through the GI tract, it transmits data -- including pressure, pH and temperature -- to a SmartPill Data Receiver worn by the patient. Once the single-use capsule has passed from the body, the patient returns the Data Receiver to the physician who then can download the collected data to a computer, where it can be analyzed.

Source: New York- Presbyterian Hospital ([news](#) : [web](#))

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