

**Alan Wittgrove, MD**

Wittgrove Bariatric Center, La Jolla, CA 92037  
*A Bariatric Surgery Center of Excellence*

---

## EVALUATING THE DISSOLVE RATE OF Bx ESSENTIALS MULTIVITAMIN & MINERAL TABLETS IN PATIENTS AFTER GASTRIC BYPASS SURGERY

---

**Purpose**

The purpose of these observations was to assess the dissolve rate of Bx Essentials Multivitamin & Mineral without Iron tablets in patients after bariatric surgery.

**Overview**

There is no question that vitamin and mineral supplementation in bariatric patients is important. The benefits of proper nutrition and supplementation have been well established in patients who have undergone gastric bypass surgery. While chewable multivitamin tablets may provide a good source of elemental or foundation nutrition, they often fall short of the levels of these vitamins that clinicians desire to support their bariatric patients. Because vitamins and minerals can leave a bitter taste, nutrient levels are therefore compromised for the sake of palatability in a chewable form—a form that to date has seemingly provided the only viable option for this unique set of patients.

Multivitamin tablets, conversely, may supply the desired levels of nutrients. However, the uncertainty of their ability to dissolve in a patient lacking stomach acid makes them a less desirable choice—or even the cause of a gastrointestinal obstruction—for these patients. Many commercial vitamins are manufactured with shellac or a coating that may inhibit timely dissolution *even in a stomach with healthy acid production*. Gastric bypass patients no longer have this stomach acid—or a notable amount of fluid of any kind—and may have strictures that would prevent an undissolved tablet from passing. It is imperative, therefore, to establish a multivitamin tablet's dissolve rate before a prudent recommendation of this delivery form can be made. To date, no known published studies on the digestibility of multivitamin and mineral tablets in this patient population have been conducted.

Bx Essentials Multivitamin & Mineral without Iron (BxEM&M) formula is developed and manufactured by Metagenics in a facility that is certified for Good Manufacturing Practices (GMP) by the NNFA, NSF, and TGA. Metagenics also conducts testing beyond GMP requirements to ensure that its tablets dissolve in a timely fashion to maximize effectiveness. These tests, however, are intended to simulate a normal digestive process.

In consideration of gastric bypass patients, BxEM&M is formulated with amino acid chelates—or “pre-digested” minerals—and a body-ready blend of folates to help assure bioavailability of vital nutrients. In addition, it is formulated with minimal excipients (inactive ingredients that bind nutrients for consistent tablet size and ease of

manufacturing) to enable maximum nutrients per tablet, allowing patients to take fewer tablets—especially if comparing to a similar nutrient profile provided in capsule form (which can also present a challenge to bariatric patients). The tablet's light coating was also designed for ease of dissolution.

This formula has been clinically tested in the Functional Medicine Research Center<sup>SM</sup>, the clinical research arm of Metagenics, in a variety of patients with digestive concerns.

**Plan**

With no historical studies of this nature to provide methodology guidance, the following plan was established to evaluate the breakdown effectiveness of BxEM&M in bariatric patients before broad-scale recommendations.

*Patient Profile*

- Patients were selected 4 to 5 weeks after bariatric surgery to best ensure there would be some degree of stricture from the anastomosis to inhibit a tablet's passage.

*Methodology*

- The aid of InScope, manufacturer of the PillCam<sup>TM</sup>, was enlisted to provide a measurement and observation device.
- A retrieval line was affixed to the PillCam, due to its inability to pass through the anastomosis.

**Results & Summary**

This test showed that even in this difficult population, the BxEM&M tablet was well-tolerated and dissolved rapidly within 15 minutes. The PillCam clearly showed that the tablet breakdown was at such a level to allow unhindered passage through the anastomosis. Patients reported no “repeating” or reflux after tablet consumption.

The results of these groundbreaking observations suggest that the Bx Essentials Multivitamin & Mineral without Iron formula may be uniquely qualified as a tablet delivery form to provide a viable means of nutritional support as part of a doctor-recommended program for bariatric patients.

**Note**

This report describes the results of patients under the care of a licensed healthcare practitioner. The nutritional supplement discussed in this report is to be used under the supervision of a physician or other licensed healthcare practitioner.

PillCam<sup>TM</sup> is a trademark of InScope, a division of Ethicon Endo-Surgery, Inc. and is not associated with Metagenics, Inc.

No financial support for this study was provided by Metagenics, Inc.