



## The Weight Loss Problem Associated with MC

by Wayne Persky

**In essence, the following issues combine to cause us to lose weight.**

For those of us who have an inflamed small intestine, and/or an inflamed pancreas, our weight loss can be attributed to any combination of the following issues:

- Incomplete digestion (which doesn't allow the nutrients to be released so that they are available for absorption).
- Inflammation (which compromises the ability of the small intestine to absorb any nutrients which might be released by the digestive process).
- Rapid transit caused by secretory diarrhea (watery diarrhea).

And although there's no research to back this up, it's rather likely that those of us who have the most serious weight loss problems, also have the biggest problems with inflammation, and consequently, we have a serious problem with reduced enzyme production by both the small intestine and the pancreas. Watery diarrhea can also contribute to weight loss, especially if dehydration occurs.

While a worrisome amount of weight loss can occur for some individuals with microscopic colitis (MC), most medical institutions consider weight loss to be a secondary symptom (if they even recognize it as a symptom), possibly attributed to chronic diarrhea or malabsorption. Consequently, they don't consider weight loss to be one of the most prominent symptoms, and not all hospitals or healthcare centers even bother to list it as a symptom of MC on their website.

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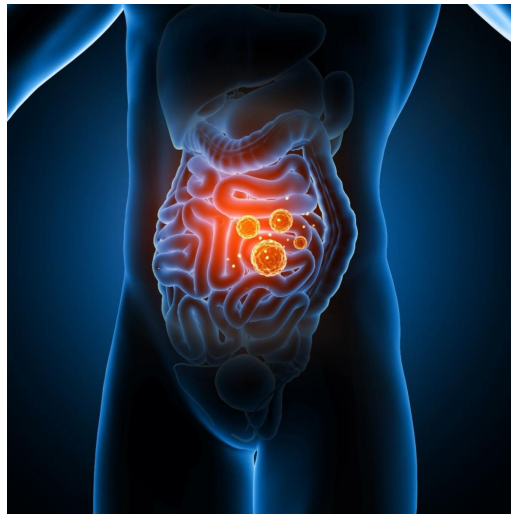
**Weight loss is common symptom of MC.**

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**Incomplete digestion, inflammation, and rapid transit are the main causes.**

**Many gastroenterologists consider MC to be a "minor inconvenience".**

That dismissive attitude is probably a result of a generally poor understanding of the disease and its treatment. And as any MC patient who is unable to achieve remission is repeatedly reminded on a daily basis, diarrhea, malabsorption, and weight loss are very common (and often debilitating) symptoms of MC, and not just "inconveniences" that occasionally cause minor problems for some patients. This seems to be an issue where there's a huge disconnect between the concerns of most MC patients and their doctors.



**As usual, the devil is in the details.**

Not all MC patients lose weight, but for those of us who do lose weight, it tends to be a persistent and worrisome problem. And to add insult to injury, the problem seems to mostly affect those of us who can least afford to lose any more weight. Based on shared experiences posted on the discussion and support forum associated with our website, it appears that roughly half of us experience weight loss, and the inability to regain any significant amount of the weight that we have lost, as long as the disease is active.

**The "disconnect" problem is probably due to the original medical description of MC.**

The original medical description of MC does not mention pain or weight loss. Consequently, it has taken decades for most gastroenterologists to acknowledge these symptoms, and some gastroenterologists still cling to the original definition, and refuse to acknowledge symptoms not described there.

**The nutrient malabsorption problem causes most of the weight loss.**

As the inflammation level continues to climb, so does the damage to the intestines (and other

organs in the digestive system), which leads to the malabsorption problem. Note that only a relatively small percentage of certain nutrients are absorbed in the colon, specifically electrolytes such as magnesium, sodium, chloride, and calcium. The colon also absorbs water, oxalate, short chain fatty acids, and vitamin K. But the lion's share of nutrients are normally absorbed in the small intestine. Logic obviously dictates that in order for significant nutrient malabsorption to occur, the small intestine also has to be inflamed (in addition to the inflamed status of the colon).

### **Research verifies that MC patients have small intestinal inflammation.**

Interestingly, published research shows that mild duodenal damage is associated with MC in more than half of the cases (Bonagura, et al., 2016)<sup>1</sup>. By mild, this refers to a Marsh 1 level of damage (as related to the diagnostic criteria for celiac disease). A Marsh 1 level of damage in the small intestine basically meets the definition of the level of inflammation seen in the colon with MC, namely, it refers to an increased infiltration of intraepithelial lymphocytes into the tips of the villi lining the epithelia of the small intestine. The basic difference between the anatomy of the epithelia of the small and large intestines is that the epithelia of the large intestine contain no villi. The villi of the small intestine provide a huge increase in the surface area of the epithelia available for the absorption of nutrients.

### **Small intestinal inflammation compromises digestive enzyme production.**

The finding that more than half of MC patients have small intestinal damage is not surprising, because the poor digestion associated with MC has to be caused by something other than an inflamed colon, and that something is almost surely primarily due to a severe reduction of digestive enzyme production by the small intestine, as the inflammation level of the small intestine increases. Because of the reduced enzyme production, digestion is compromised.

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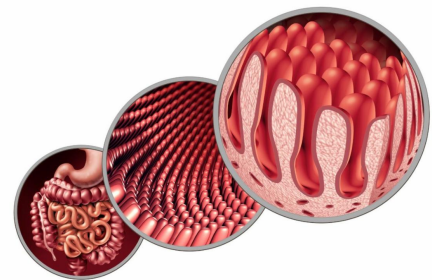
**Nutrient malabsorption is the result of several issues.**

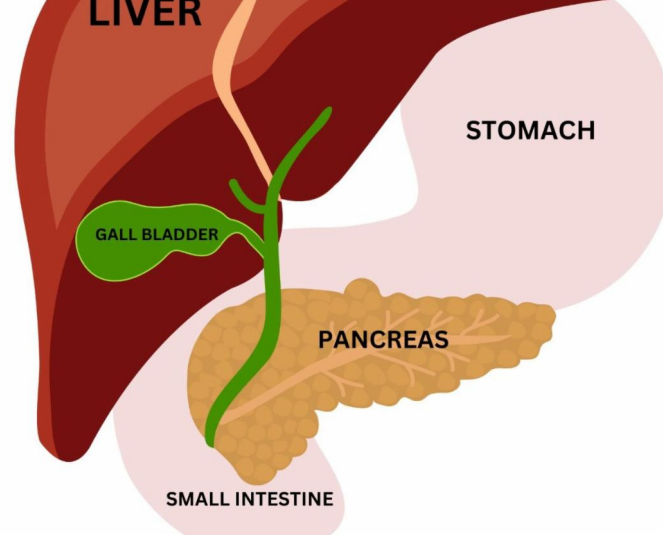
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**Disrupted digestive enzyme production is common.**

### **Here's how disrupted digestive enzyme production occurs:**

Digestive enzymes such as lactase, sucrase, and maltase are produced by enterocytes (which are vertically elongated cells that form the top layer of cells in the epithelia of the small intestine). When the small intestine is inflamed (known as enteritis), these cells can be damaged by inflammation or infection, reducing their ability to secrete digestive enzymes.





The brush border region of the small intestine contains enzymes critical for digestion, such as disaccharidases. Inflammation can impair these enzymes' activity, leading to disrupted digestion.

Enteritis can also alter gut motility and secretion, further impairing the digestion and absorption of nutrients, which may indirectly affect enzyme production and function.

### **And the pancreas is also often inflamed with MC.**

According to a large, population-based data set involving over 12,000 MC patients in Sweden, a study showed that patients with MC had a 57% higher risk of developing acute pancreatitis, compared with matching reference individuals (Bergman, Roelstraete, Olén, Lindkvist, and Ludvigsson, 2023)<sup>2</sup>.

The study showed a potential link between systemic inflammation or autoimmunity in MC and non-gallstone acute pancreatitis. The elevated risk of acute pancreatitis persisted over extended follow-up periods, with an increased risk of 75% for patients followed for more than 10 years. This suggests that the underlying mechanisms linking MC to pancreatitis are chronic and may involve long-term systemic changes rather than transient or short-term factors. And the fact that non-gallstone acute pancreatitis is significantly linked to MC suggests that autoimmunity, medication use (such as corticosteroids), or bile acid malabsorption might play a role.

### **Digestive enzymes produced by both the small intestine and the pancreas are vital for digestion.**

But overall, the digestive enzymes produced by the pancreas are the most important, because they perform the bulk of macronutrient digestion, setting the stage for small intestinal enzymes to complete the process. Without pancreatic enzymes, digestion would largely fail, while deficiencies in small intestinal enzymes usually result in specific issues (for example, lactose intolerance) rather than global malabsorption.

The pancreas produces a wide array of enzymes essential for breaking down macronutrients into absorbable forms, including:

- Amylase, which breaks down carbohydrates into simple sugars (maltose, maltotriose), and begins digestion of complex carbohydrates in the small intestine.
- Lipase, which breaks down dietary fats into glycerol and free fatty acids, and works alongside bile from the liver to emulsify fats.
- Proteases such as trypsinogen, chymotrypsin, and carboxypeptidase, which break down proteins into smaller peptides and amino acids.
- Nucleases, which digest nucleic acids (DNA and RNA) into nucleotides.

The small intestine produces enzymes localized in the brush border (microvilli) of the intestinal lining to complete the final stages of digestion:

- Disaccharidases, which break down disaccharides into monosaccharides:
- Lactase, which converts lactose into glucose and galactose.
- Sucrase, which converts sucrose into glucose and fructose.
- Maltase, which converts maltose into two glucose molecules.
- Peptidases, which break down small peptides into individual amino acids.
- Enterokinase (or enteropeptidase), which activates pancreatic trypsinogen into trypsin, a critical step in protein digestion.

### How digestion normally proceeds:

After food is consumed, the stomach breaks it down into a semi-liquid form called chyme.

Chyme enters the small intestine, triggering the release of hormones like secretin and cholecystokinin (CCK).

Secretin stimulates the pancreas to release bicarbonate (to neutralize stomach acid). CCK prompts the pancreas to secrete digestive enzymes. The enzymes break down carbohydrates, proteins, and fats into absorbable units:

- Sugars are converted into monosaccharides such as glucose.
- Proteins are converted into amino acids.
- Fats are converted into fatty acids and monoglycerides.

These smaller molecules are absorbed through the intestinal lining into the bloodstream or lymphatic system.

### If the small intestine and pancreas are inflamed, digestion will be disrupted.

The resulting significant reduction in the production of digestive enzymes causes chaos in the digestive process. Consequently, chyme is dumped into the colon in a partially digested state, where it's fermented by opportunistic bacteria, resulting in the production of gas, cramps, and diarrhea. All this contributes to an environment that produces the unpleasant symptoms of MC.

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**Pancreas inflammation reduces its digestive enzyme production.**

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**The small intestine microvilli produce important digestive enzymes, which are also reduced by inflammation.**

### Will digestive supplements help?

Maybe, depending on the primary causes of the weight loss. Supplemental enzymes may help alleviate weight loss problems caused by pancreatitis, especially. Supplements for lipase, amylase, and protease, for example, often help to digest fats, carbohydrates,

and proteins, respectively, although some of us are not able to tolerate such supplements while we're still reacting. Reducing symptoms such as bloating, gas, and diarrhea may improve appetite and food intake indirectly, adding weight, or at least reducing weight loss.



When MC is accompanied by bile acid malabsorption, fat digestion is usually impaired (steatorrhea). Supplemental lipase can aid fat breakdown, potentially improving calorie absorption.

### **Enzyme supplements are not likely to be more than a partial solution.**

While enzyme supplements may support digestion, they are not a comprehensive solution for weight loss in MC patients because chronic inflammation in MC leads to systemic effects, including weight loss, fatigue, and muscle wasting. And persistent diarrhea contributes to calorie loss and dehydration, which enzymes alone cannot resolve.

Weight loss may be driven by the autoimmune nature of MC or associated conditions (for example, celiac disease, or thyroid disorders such as Hashimoto's thyroiditis). And of course, the restrictive diet we adopt in order to stop the inflammation almost always results in a lower calorie intake when compared with our previous diet, unless we compensate by eating larger portions of the foods that we can safely eat.

### **As most of us have discovered, controlling this disease is rarely easy.**

And in some cases, using enzyme supplements may amount to little more than wishful thinking, because there is limited direct evidence of the effectiveness of supplemental digestive enzymes in reversing weight loss specifically for MC patients. Most research focuses on enzyme use in conditions like pancreatic insufficiency or irritable bowel syndrome (IBS).



**Enzyme supplements are of marginal help.**



**Gaining weight is hard until we get our MC under control.**

## **The Bottom Line**

For those of us who are forced to have to deal with worrisome weight loss, we're facing a huge challenge. The reality is, there are no simple solutions. The only way to regain the ability to gain weight normally (as we were able to do before we developed MC) is to resolve all the symptoms of MC that are associated with weight loss. Basically, that means putting the disease into remission. Until the disease is in remission, for most of us, regaining the weight that we lost is little more than a dream.

And even after we manage to coax the disease into remission, regaining the weight we lost may not be easy, because we're still forced to eat a restricted diet in order to prevent a relapse., and as the article in the October newsletter described, it typically takes a number years for the cells in the epithelia of our colon to return to normal (or in some cases, close to normal, because we heal more slowly as we age). Here is a direct link to that newsletter, if you want to review it.

<https://www.microscopiccolitisfoundation.org/uploads/5/8/3/2/58327395/1924a864178.pdf>

Consequently, the ability to gain weight is slow to recover. Nutrient absorption will begin to slowly improve after we reach remission, but the rate of improvement is likely to mirror the rate at which the cells in the epithelia of our colon recover. Once we have the disease in remission, though, we have a huge advantage., because at least our ability to absorb nutrients will be improving, so that gaining weight is definitely possible if we take in enough calories.

We can do that either by eating more of the foods that we normally can safely eat. or by adding calories by

sprinkling olive oil or coconut oil on many of our foods, eating avocados or other high-fat fruits, and foods that contain higher amounts of sugar, whether they be desserts, or snacks. Maple sugar is a safe sugar for most of us, as are dates, and honey. And as we regain our ability to properly digest fats, we can eat meat with a higher percentage of fat. Weight gain will begin slowly, but it will gain momentum as our digestive system slowly heals.

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### References

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2. Bergman, D., Roelstraete, B., Olén, O., Lindkvist, B., and Ludvigsson, J. F. (2023). Microscopic Colitis and Risk of Incident Acute Pancreatitis: A Nationwide Population-Based Matched Cohort Study. *American Journal of Gastroenterology*, Retrieved from <https://pubmed.ncbi.nlm.nih.gov/37171015/>

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