

Vitamin D Insufficiency Linked to Irritable Bowel Syndrome

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

March 29, 2023

STORY AT-A-GLANCE

- › Irritable bowel syndrome (IBS) is the most common gastrointestinal disorder in the U.S. An estimated \$1.6 billion is spent on treatments each year
- › Common signs and symptoms of IBS include frequent abdominal discomfort, spastic colon, gas, bloating, diarrhea and/or constipation
- › About 75% of people with IBS have insufficient levels of vitamin D, and about 70% report improvement when taking vitamin D supplements
- › Research looking at gene expression and variations in serotonin pathways also concluded that IBS patients tend to have lower vitamin D levels, and that expression of genetic biomarkers for IBS are modulated by vitamin D
- › Nearly 60% of NFL players have low vitamin D, placing them at increased risk for injury; 56% of those with insufficient levels (20 to 31 ng/mL) of vitamin D suffered lower extremity muscle strain or injury

Editor's Note: This article is a reprint. It was originally published February 5, 2018.

Irritable bowel syndrome (IBS) is the most common gastrointestinal disorder in the U.S. An estimated \$1.6 billion is spent on treatments each year.^{1,2} Depending on the source, data suggests anywhere from 10 to 25% of Americans struggle with this condition.^{3,4}

IBS is completely different from another condition with a similar name: inflammatory bowel disease (IBD), which is an autoimmune disease that can have very serious

consequences. While it can cause debilitating pain, IBS is a functional bowel disorder, meaning there are no significant physical conditions that contribute to the problem. Common signs and symptoms of IBS include frequent:

- Abdominal discomfort and/or pain
- Spastic colon (spastic contractions of the colon)
- Gas and/or bloating
- Diarrhea
- Constipation

IBS is frequently treated with drugs such as antispasmodics and even antidepressants. While these drugs may help control symptoms, they do not address the underlying problem, which is primarily diet related. Typically, simply avoiding gluten will result in significant improvement. Recent research has also highlighted the importance of vitamin D optimization in this condition.

IBS Strongly Associated With Vitamin D Insufficiency

A recent review^{5,6,7} in the European Journal of Clinical Nutrition notes that of the seven published studies looking at vitamin D status and IBS prevalence, four observational studies concluded vitamin D deficiency is prominent among those with IBS – with about 75% having insufficient levels – and two intervention studies reported “improvement in IBS symptom severity scores and quality of life” among those given vitamin D supplements. In one, 70% of IBS patients improved on the vitamin D regimen. According to the authors:

“The available evidence suggests that low vitamin D status is common among the IBS population and merits assessment and rectification for general health reasons alone. An inverse correlation between serum vitamin D and IBS symptom severity is suggested and vitamin D interventions may benefit symptoms.”

Lead author Bernard Corfe, Ph.D.,⁸ a senior lecturer in oncology at the University of Sheffield in the U.K., told reporters, “It is evident from the findings that all people with IBS should have their vitamin D levels tested and a large majority of them would benefit from supplements.”⁹

Another recent study¹⁰ looking at gene expression and variations in patients’ serotonin pathways also concluded that IBS patients tend to have lower vitamin D levels, and that expression of genetic biomarkers for IBS are modulated by vitamin D. According to the authors:

“Strikingly, the direction of gene regulation elicited by vitamin D in colonic cells is ‘opposite’ to the gene expression profile observed in IBS patients, suggesting that vitamin D may help ‘reverse’ the pathological direction of biomarker gene expression in IBS. Thus, our results intimate that IBS pathogenesis and pathophysiology may involve dysregulated serotonin production and/or vitamin D insufficiency.”

Football Players Sidelined by Low Vitamin D

In related news, other recent research¹¹ found nearly 60% of National Football League players have low vitamin D levels, placing them at increased risk for injury. 56% of those with insufficient levels of vitamin D (a serum level of 20 to 31 ng/mL) suffered some form of lower extremity muscle strain or muscle injury while playing, and 73% of those with severe deficiency (a vitamin D level of 20 ng/mL or lower) ended up with muscle injuries.

For comparison, only 40% of those with “normal” vitamin D levels reported injuries, defined here as a vitamin D level of 32 ng/mL or greater. Analysis revealed inadequate vitamin D levels nearly doubled a player’s odds of suffering lower extremity strain or core muscle injury, and raised their odds of hamstring injury nearly fourfold.

Considering the research showing 40 ng/mL is really the cutoff point for general health, and that 60 ng/mL is likely a more ideal level, one wonders if sports injuries might not

be reduced even more were the players to maintain levels of 40 to 60 ng/mL. In a hospital news release, Dr. Brian Rebolledo, orthopedic surgeon specializing in sports medicine at the Scripps Clinic in La Jolla, California, and the lead author of the study said:¹²

"We were interested in vitamin D in this population because it's been shown to play an important role in muscle function and strength, which is critical to the high-performance athlete. Most of the past research into the harmful effects of low vitamin D has focused on the elderly, but relatively few studies have examined this association in the elite athlete.

This study suggests that monitoring and treating low vitamin D may potentially be a simple way to help prevent certain muscle injuries."

Have Gastrointestinal Issues? Avoid GMOs

Getting back to IBS, aside from optimizing your vitamin D level, it would be wise to evaluate your diet a bit further. As mentioned, avoiding gluten is an important first step in treating this condition, but avoiding GMO foods loaded with glyphosate and other pesticides may be equally important. As previously noted by Naked Food Magazine:¹³

"If you ... suffer from a chronic digestive issue, then you should know that the food you choose to consume could be carrying a gene that is designed to intentionally cause intestinal rupture. [GMO] foods that contain Bt toxin, a built-in insecticide that inherently works by imploding the stomach of the creature that is feasting on it, could very well be contributing to your intestinal angst."

Bt plants have been genetically engineered (GE) to be equipped with a gene from the soil bacteria *Bacillus thuringiensis* (Bt), allowing the plants to produce Bt toxin internally. Plant-incorporated pesticides such as Bt (both the protein and its genetic material) are actually registered with the EPA as a pesticide,¹⁴ but the Bt plant itself is not regulated as such, which has resulted in the false claim that Bt plants have reduced pesticide usage.

Importantly, the Bt toxin in Bt plants does not degrade, nor can it be removed or cleaned off the food because it's integrated into each cell of the plant. The plant-produced version of the poison is also thousands of times more concentrated than the topical spray, making these GE foods a potential cause of significant health problems.

Bt Toxin Is Exempt From Toxicity Requirements

Plant-incorporated Bt toxin in Bt soybeans is also exempt from the requirement of a tolerance level for residues,¹⁵ both in the commodity and in the final food product. The final rule on this was issued in February 2014. This is truly incomprehensible in light of the potential for harm. Originally, Monsanto and the U.S. Environmental Protection Agency claimed the Bt toxin produced inside the plant would be destroyed in the human digestive system, therefore posing no health risk.

This was proven false in 2011, when doctors at Sherbrooke University Hospital in Quebec found Bt toxin in the blood of 93% of pregnant women tested, 80% of umbilical blood in their babies and 67% of nonpregnant women.¹⁶ This study revealed that Bt toxin actually does bioaccumulate in your body, and you can bet it's not going to do your health any favors.

Research¹⁷ suggests it may produce a wide variety of immune responses, including elevated IgE and IgG antibodies, typically associated with allergies and infections, and an increase in cytokines, associated with allergic and inflammatory responses.

For a Healthier Gut, Clean Up Your Diet, Optimize Vitamin D

If you struggle with IBS or any other gut-related issues, avoiding GE foods of all kinds may be a significant part of your answer. Aside from Bt plants, GE plants designed to be herbicide-resistant pose near-identical problems, as they tend to be loaded with toxic herbicides such as glyphosate, which have been shown to take a significant toll on your gut and overall health by destroying your microbiome.

Since GE foods are not required to be clearly labeled in the U.S., your best bet is to eat fresh, organic foods whenever possible and avoid processed foods.

As for vitamin D, the evidence suggests 60 ng/mL may be a more ideal low-end target rather than 40 ng/mL. Hitting 60 ng/mL significantly lowers your risk of all cancers, and for women concerned with breast cancer, having a level of 60 ng/mL can lower your risk by as much as 83% compared to having a level below 20 ng/mL.¹⁸

For general health, 40 ng/mL appears to be the absolute lowest cutoff point, but most cancers still appear to occur in those with a vitamin D blood level between 10 and 40 ng/mL,¹⁹ so shooting a bit higher appears prudent.

Regular, sensible sun exposure is the best way to optimize your vitamin D status, but many will need to take an oral vitamin D3 supplement, especially during winter months. The only way to gauge whether you might need to supplement is to get your level tested, ideally twice a year, in the summer and winter when your level is at its peak and low point.

Grassroots Health offers vitamin D testing at a great value through its D*Action study. Also consider eating more vitamin D containing foods, such as beef liver, mushrooms, organic free-range egg yolks, cod liver oil, caviar (fish roe) and fatty fish such as wild Alaskan salmon, mackerel and sardines.²⁰

Other Strategies That Can Improve IBS Symptoms

Aside from cleaning up your diet and optimizing your vitamin D, the following strategies may also help improve your IBS symptoms:

- **Get checked for parasites** – To make sure you're not struggling with a physical condition that could be simulating IBS, have your stool checked for parasites. Some parasites, such as giardia, can sometimes be a contributing factor that needs to be treated.

- **Boost healthy bacteria in your gut** – Lowering the amounts of sugar and processed foods in your diet will automatically create a milieu that will support the growth of good bacteria, but you can further enhance that process by eating fermented foods and/or taking a high-quality probiotic supplement.
- **Boost your fiber intake** – Taking additional fiber can also be very helpful to control IBS symptoms such as constipation and diarrhea. Fiber such as organic psyllium tends to be particularly helpful, and is my personal favorite.

Psyllium is adaptogenic, meaning if you're constipated it will soften your stool and help increase your bowel frequency, and if you have loose stools and frequent bowel movements, it will help with stool formation and decrease the frequency of bowel movements.

If you decide to use psyllium, make sure it is organic as the risks of pesticide residue in nonorganic products far outweigh the benefit you would receive from the fiber itself. Another good fiber source is whole, organic flaxseed. You can take few tablespoons of freshly ground flaxseed per day, or better yet, soak the organic flax seeds overnight and put them in your smoothie.

- **Address emotional challenges** – Last but certainly not least, many IBS sufferers tend to have an unresolved emotional component that contributes to their physical problem. This is one of the reasons antidepressants are frequently prescribed. Meditation, prayer and psychological techniques and tools like the Emotional Freedom Techniques or EFT are all strategies you can use to effectively address emotional challenges.

Sources and References

- ¹ [American Journal of Medicine 2015 Aug;128\(8\):817-27](#)
- ² [Irritablebowelsyndrome.net](#)
- ³ [Clinical Epidemiology 2014 Feb 4;6:71-80](#)
- ⁴ [Aliment Pharmacol Ther. 2005 Jun 1;21\(11\):1365-75](#)
- ⁵ [European Journal of Clinical Nutrition 2018, DOI: 10.1038/s41430-017-0064-z](#)
- ⁶ [University of Sheffield January 25, 2018](#)

- ⁷ Daily Mail January 25, 2018
- ⁸ University of Sheffield, Dr. Bernard Corfe BSc, PhD
- ⁹ Indianexpress.com January 25, 2018
- ¹⁰ J Neurogastroenterol Motil. 2018 Jan 30;24(1):96-106
- ¹¹ Arthroscopy: The Journal of Arthroscopic and Related Surgery December 21, 2017 [epub ahead of print]
- ¹² Scripps Health December 21, 2017
- ¹³ Naked Food Magazine, Does GMO Equal IBS?
- ¹⁴ EPA.gov EPA's Regulation of Biotechnology
- ¹⁵ Federal Register, Bacillus thuringiensis Cry1F Protein in Soybean; Exemption From the Requirement of a Tolerance
- ¹⁶ Reprod Toxicol. 2011 May;31(4):528-33
- ¹⁷ J Agric Food Chem. 2008 Dec 10;56(23):11533-9
- ¹⁸ European Journal of Cancer 2005 May;41(8):1164-9
- ¹⁹ PLOS ONE 2016; 11 (4): e0152441
- ²⁰ Nutritiondata.self.com, Foods Highest in Vitamin D