

Gut: Treatment Protocols - SIBO, Part 2

Here's the protocol we've used at CCF for many years. We're often updating and tweaking it. This is the current protocol as of the time of this recording, which is in December of 2018. We have gone back and forth with adding a prebiotic fiber such as partially hydrolyzed guar gum or PHGG to the botanical protocols. There was some compelling research that was released on this that suggested that adding a prebiotic to the treatment protocol increases its efficacy. This is based on a fundamental principle in microbiology, which is you have to feed them to kill them, which means if you're starving the bacteria and not providing them with a food source by doing like a very low-FODMAP diet and lowering fiber intake, then they'll go into a dormant state, and they'll be harder to kill with antibiotics.



Core botanical protocol

- GI Synergy (Apex Energetics):** broad spectrum of anti-bacterial, anti-fungal, and anti-parasitic botanicals
- Lauricidin (Lauricidin):** monolaurin, an extract of lauric acid, with activity against fungi, viruses, bacteria, and biofilm
- Interfase Plus (Klaire Labs):** a preparation of systemic enzymes that disrupt biofilm
- TerraFlora** probiotics with antimicrobial properties

However, after a couple of years of doing this in the clinic, we found that we had worse results when we added partially hydrolyzed guar gum into the protocol. Many patients with SIBO are simply not able to tolerate it, so we have decided to take that out of our protocol despite that one very positive study that showed a pretty significant increase in the efficacy of rifaximin with PHGG added to the protocol.

Let's talk about each component in a little more detail. GI Synergy is a product from Apex Energetics that has a combination of three of their products, actually. One is HPLR, which are antibacterial herbs. One is Yeastonil, which has antifungal herbs, and one is Parastonil, which has antiparasitic herbs. But those are just rough ideas or rough categories because botanicals don't have black-and-white distinctions. It's really just a great combo of several different

antimicrobial herbs in a convenient delivery package for patients, and we found it to work exceptionally well.

Lauricidin is monolaurin. It's a particular form of monolaurin, which is an extract of lauric acid found in coconut oil and mother's milk, and it's what's responsible for the antimicrobial qualities of coconut oil and mother's milk, at least in part. There are other antimicrobials in mother's milk like lactoferrin. Lauricidin has activity against yeast, viruses, and bacteria, and also some activity against biofilm. A recent study tested the activity of 15 phytochemicals against *Borrelia burgdorferi*, which is the bacterium that causes Lyme disease, which is extremely difficult to treat, as I'm sure you know. And monolaurin was actually one of the four most effective botanical compounds, but only one of two that had effect against *Borrelia* biofilm. Importantly, it did not cause toxicity to human cells. So we found it to be really effective and most importantly really well tolerated. I believe it is relatively safe to take for a longer term or to take repeatedly, so that's important for patients who have recurrent problems.

Interfase Plus is a biofilm disruptor. So, what's biofilm? It's any group of microorganisms in which cells stick to each other on a surface, and in this case we're talking about the gut lining. Cells are embedded in an extracellular matrix, which protects the microbes from antimicrobials in our own immune system, and some studies show that antibiotics are hundreds or even thousands of times less effective against biofilm. So Interfase Plus and Lauricidin in this protocol help to break up biofilm and increase the efficacy of treatment.

As I mentioned a few slides back, we've gone back and forth with including PHGG in our protocols, and we currently do not include it because we weren't seeing benefit. In fact, the efficacy of the protocol seemed to go down, and some patients had a very hard time tolerating it. The study I mentioned showed that 77 patients who were treated for SIBO were randomized into two groups. One took rifaximin at 1200 mg a day for 10 days. The other took the same dose of rifaximin but also took 5 g per day of partially hydrolyzed guar gum. The eradication rate for SIBO in the patients who only took rifaximin were 62 percent versus 87 percent for those who took rifaximin and partially hydrolyzed guar gum. You can see that's a pretty compelling difference; 25 percent increase in efficacy, and that's what led us to start using PHGG in the protocols. But again, for whatever reason, our experience with it did not reflect the results in that study, so you can just make your own decision here. Your patient population may be different than ours perhaps, and that was a pretty interesting study, but I found over a decade of doing this now that omitting prebiotics from the treatment protocol tends to work better for most people.

In the author's words, the author of this study, they said, "Our hypothesis was based on the fact that antibiotics act only on intestinal bacteria but do not solve the conditions predisposing to SIBO." One of these conditions is impaired gut motility, which creates a favorable environment for SIBO. Partially hydrolyzed guar gum has been shown to improve motility. Another possibility, and this is what Dr. Pimentel believes, and I'm going to link to the podcast I did with Dr. Pimentel so you can listen to this, is that rifaximin works by inhibiting cell division. That's how a

lot of antibiotics work, and if the patient is not eating sufficient fiber during treatment, the bacteria go dormant, and they stop dividing, so they go into a kind of survival mode, where they go into hiding, more or less. This can happen on a low-FODMAP diet, which a lot of patients are advised to do during treatment. I used to advise that myself because low-FODMAP diets will relieve symptoms and not feed the bacteria, but what happens is those bacteria go dormant. They stop dividing, and then rifaximin or other antimicrobials may not work as well because the bacteria in a dormant state are much more difficult to kill by any antimicrobial that works by inhibiting cell division. Dr. Pimentel believes that partially hydrolyzed guar gum may encourage cell division by providing a food source for the bacteria and thus make the treatment more effective, and it's why he does not recommend low-FODMAP diets during antimicrobial treatment for SIBO. We have also embraced that recommendation and no longer suggest low-FODMAP diets during treatment. Low-FODMAP diets still may be helpful to prevent recurrence, but they are not a good idea while you're treating SIBO with antimicrobials.

Terraflora is a broad-spectrum synbiotic that's formulated with the combination of spore form probiotics and advanced food-based ancient prebiotics. These are often referred to as soil-based organisms, but technically, they are transient gut commensal organisms that use an environmental vector soil, in this case to gain exposure to the host. They spend about 21 to 27 days in the gut. They don't colonize the gut, and they perform a variety of important functions. One of these is secretion of antimicrobial peptides, which, of course, have an antibiotic effect. The one advantage of Terraflora is that it's shelf-stable, and it is generally well-tolerated, even by people who have SIBO and don't typically tolerate other probiotics very well, so for these reasons, we do use it in the protocol.

Terraflora contains *Bacillus clausii* which is the most frequently prescribed probiotic in the world. It goes by the brand name Enterogermina, which is Italian, and it's used in 33 countries and it's been on the market for over 60 years. In the SIBO world, there is a bias against using probiotics during treatment. I'm not entirely sure why, as the only studies I've been able to find looking at probiotic use during SIBO treatment showed a benefit. One of these actually looked at Enterogermina (*B. clausii*), and they found that patients with SIBO diagnosis by glucose breath test were given *Bacillus clausii* for one month and that led to a glucose breath test normalization of 47 percent, which is very close to the rifaximin normalization average of 49 percent. Another study compared a blend of lactobacillus and bifidobacteria probiotics versus placebo in patients with SIBO and chronic liver disease and SIBO improved in 25 percent of patients with these conditions versus zero percent with placebo.