

# Gut Treatment SIBO Review

## GUT TREATMENT APPROACH

Stage 1: Addressing present pathologies in the gut

Stage 2: Rebuilding a healthy gut ecosystem

### The Herxheimer Reaction

Patients may feel worse on certain treatment plans before they begin to feel better. This phenomenon, known as a Herxheimer reaction or Herx response, happens when treatment disrupts the biofilms that protect the gut pathogens, allowing them to release toxins into the gut and bloodstream (in cases of leaky gut).

Herx reactions are not always easily distinguishable from treatment reactions, but in general, Herx reactions dissipate a few days into the treatment. Patients experiencing a Herx response may also alternate between feeling worse and feeling better. Treatment reactions, on the other hand, persist throughout the duration of the treatment and may worsen over time.

The botanical treatment for small intestinal bacterial overgrowth (SIBO) is generally well-tolerated, but it can cause die-off or a Herxheimer response. To avoid a Herx reaction, start patients on lower doses and gradually ramp up to a full dose over time. If a patient still reacts, you may stop supplementation and add them back in one at a time to see which is causing the biggest issue.

## SIBO TREATMENT PROTOCOLS

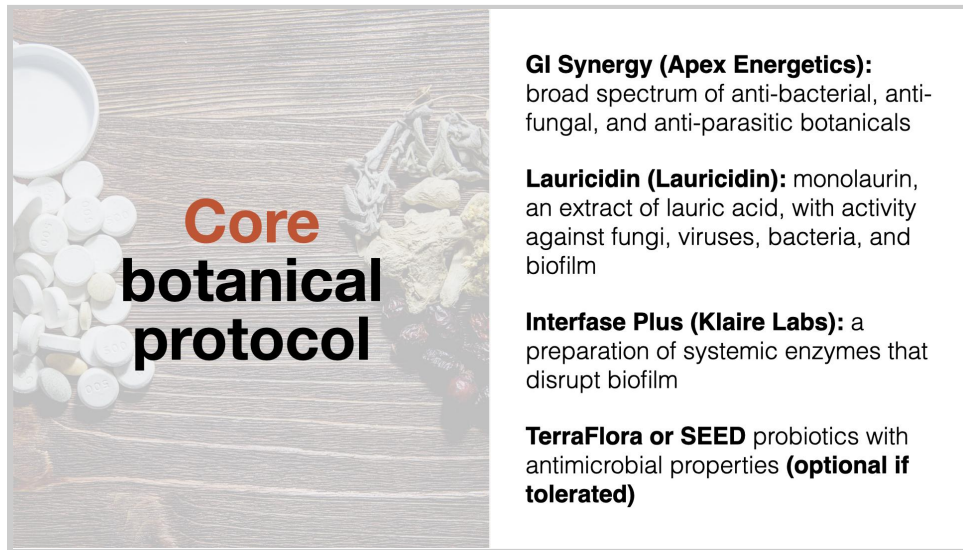
There are three general considerations to begin with when treating SIBO:

1. Duration of the treatment should correlate with breath test results, clinical experience, and recent studies.
2. Treatment depends on whether hydrogen, methane, hydrogen sulfide, or some combination of these gasses are elevated.
3. Retesting is crucial.

## CORE BOTANICAL PROTOCOL FOR SIBO

Studies have shown that botanical protocols are equivalent to or better than the prescription rifaximin treatment for SIBO. A botanical protocol is also significantly less costly to patients and may have fewer side effects for some patients. Because SIBO tends to be a recurrent issue in a subset of patients, the botanical protocol is recommended for repeated use over time.

This core botanical protocol can be used with minor tweaks for elevated hydrogen, methane, and even suspected or confirmed hydrogen sulfide excess.



**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 or SEED** probiotics with antimicrobial properties (**optional if tolerated**)

**GI-Synergy** is a blend of three products:

1. H-PLR, which are antibacterial herbs
2. Yeastonil, which is a blend of antifungals
3. Parastonil, which is a blend of antiparasitic herbs

The important thing to understand is that these botanicals tend to have multiple actions.

GI-Synergy is a great combination of antimicrobial herbs in a convenient delivery package for patients.

**Lauricidin** is a particular form of monolaurin, which is an extract of lauric acid found in coconut oil and mother's milk and is responsible, at least in part, for their antimicrobial qualities.

Lauricidin has activity against yeast, viruses, and bacteria and some activity against biofilm.

It is relatively safe to take for a longer term or to take repeatedly, which is important for patients who have recurrent problems. It is also generally well-tolerated.

**InterFase Plus** is a biofilm disruptor that increases the efficacy of treatment by allowing the treatment to penetrate the gut lining. Some studies show that antibiotics are significantly less effective against biofilm in comparison.

**Terraflora** is a broad spectrum synbiotic formulated with a combination of spore-form probiotics and advanced, food-based, ancient prebiotics. Technically, these are transient, gut commensal organisms that use an environment vector soil to gain exposure to the host. They:

- Spend about 21 to 27 days in the gut
- Are generally well-tolerated
- Secrete antimicrobial peptides “antibiotics” in the gut

**Seed Daily Synbiotic** is another broad spectrum probiotic plus prebiotic. The capsules contain 24 strains formulated for systemic health and, due to their two-in-one nested capsules, ensure an average delivery of up to 100 percent of the probiotic species.

Both Terraflora and Seed Daily Synbiotic are shelf-stable products.

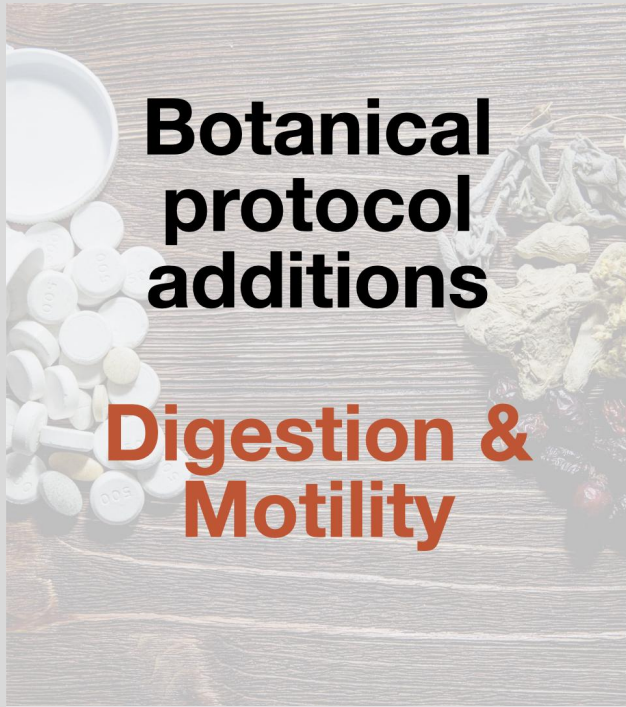
In practice, you may wait to introduce probiotics for two to three weeks until the patient is stable on the first three products.

**Partially hydrolyzed guar gum (PHGG)** has been included in this botanical protocol in the past, but clinical practice did not indicate that it was beneficial for our patients. However, PHGG has been shown to improve gut motility and may encourage cell division by providing bacteria with a food source, thus making treatment more effective. There are differing opinions as to whether PHGG or prebiotic fiber should be included in SIBO treatment protocols.

## Core botanical protocol dosages

Nutraceutical	Dosage
<b>GI Synergy</b>	1 packet BID ( <i>with breakfast and dinner</i> )
<b>Lauricidin</b>	1 scoop TID ( <i>with each meal</i> )
<b>Interfase Plus</b>	3-4 capsules BID ( <i>on empty stomach</i> )
<b>TerraFlora or SEED</b>	TerraFlora is 1 capsule ( <i>with lunch</i> ); SEED is 2 capsules daily

## CORE BOTANICAL PROTOCOL ADD-ONS FOR DIGESTION AND MOTILITY



**Botanical protocol additions**

**Digestion & Motility**

**Iberogast (Tribute Pharmaceuticals in the U.S./ Can.):** prokinetic; contains 9 botanical “bitters” that stimulate bile production and motility. Can be helpful for gas, diarrhea, nausea, and dyspepsia.

**MotilPro (Pure Encapsulations):** prokinetic containing 5-HTP, acetyl-L-carnitine, vitamin B6, and ginger to help support motility

**Betaine HCL with pepsin (many brands):** hydrochloric acid (HCL) supplement with pepsin; HCL and pepsin help with protein digestion, which is often impaired in SIBO patients

**Digestive enzymes (many brands):** helps with the breakdown of protein, carbs, and fat; can be used with patients with severe gas, bloating, etc.

**PC (Seeking Health/Body Bio):** phosphatidylcholine for patients with fat malabsorption and impaired bile metabolism.

**Iberogast** is a blend of nine botanical bitters that stimulate bile production and motility. It has been used extensively in Europe for 45 years and is well-studied for improving motility and possibly stimulating the migrating motor complex (MMC). We use this for patients experiencing:

- Constipation
- Significant gas
- Bloating
- Diarrhea
- Nausea
- Dyspepsia

Studies have indicated that Iberogast may cause elevated liver function tests, although we have not observed that in practice.

**MotilPro** is a prokinetic that stimulates gut motility differently than Iberogast. MotilPro contains 5-HTP, a precursor to serotonin that stimulates gut motility. It also contains acetyl L-carnitine, vitamin B6, and ginger. MotilPro is helpful for patients whose motility issues are due to low serotonin in the gut.

**Betaine hydrochloric acid (HCL) with pepsin** is supplemental stomach acid with pepsin, an enzyme that aids in protein digestion (which is often impaired in patients with SIBO). Treatment

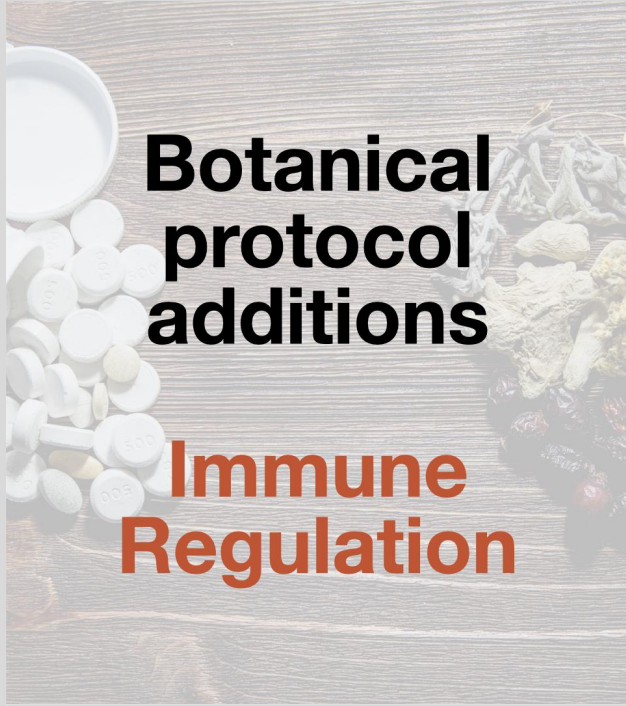
with Betaine HCL with pepsin can make patients more comfortable and help improve or alleviate symptoms.

**Phosphatidylcholine (PC)** is a nutrient essential for biosynthesis and metabolism. Supplementing with PC is advised in patients with fat malabsorption and impaired bile metabolism.

## Botanical protocol dosages: **Digestion & Motility**

Nutraceutical	Dosage
<b>Iberogast</b>	20–30 drops TID just before meals
<b>MotilPro</b>	1–2 capsules TID on an empty stomach
<b>Betaine HCL with pepsin</b>	1–5 650 mg capsules before meals; sensitive patients can use 200 mg capsules
<b>Digestive enzymes</b>	Depends on the manufacturer; take just before meals
<b>Phosphatidylcholine</b>	3,000–6,000 mg per day with or without food

## CORE BOTANICAL PROTOCOL ADD-ONS FOR IMMUNE REGULATION



**Botanical protocol additions**

**Immune Regulation**

**Serum-derived bovine immunoglobulins (SBI Protect or MegalgG2000):** dairy-free immunoglobulin concentrate that supports healthy digestion and healthy gut barrier function; it is anti-inflammatory and protective.

**ProButyrate (Tesseract):** essential gut nutrient; helpful for most GI disorders and symptoms like bloating and gas. Tesseract is a butyric acid supplement with a delivery system to offer higher bioavailability to the gut mucosa; it is anti-inflammatory and immune regulatory.

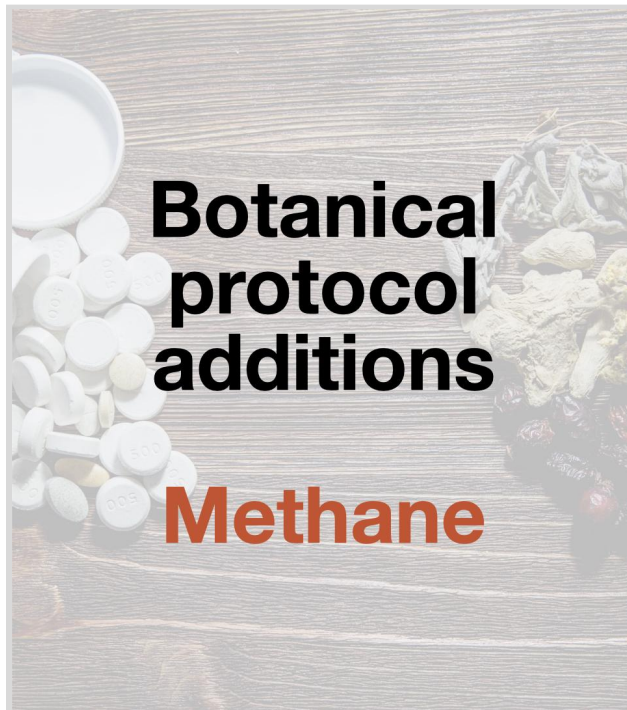
**Serum-derived bovine immunoglobulins** bind to irritants like bacteria and toxins, halting the cycle of inflammation and allowing the interstitial cycles of the Cajal cells and other gut tissues to heal. This is especially helpful for patients who do not respond to the first round or two of treatment. It may also be added to the core protocol if a patient is experiencing immune dysregulation.

**ProButyrate** supplies the important short-chain fatty acid butyrate, which has been connected to anti-inflammatory and intestinal immune regulatory effects of the gut mucosa.

## Botanical protocol dosages: Immune Regulation

Nutraceutical	Dosage
<b>SBI Protect</b>	4 capsules BID with or without food
<b>MegalG2000</b>	5 capsules BID with or without food
<b>ProButyrate</b>	3 capsules BID with or without food

### CORE BOTANICAL PROTOCOL ADD-ONS FOR METHANE



**Atrantil:** a blend of polyphenols that addresses gut bacteria; effective for bloating and abdominal discomfort and supports overall digestive health.

**Allimax Pro (Allimax Nutraceuticals):** stabilized form of allicin; potent antimicrobial.

**Ideal Bowel Support LP299V (Jarrow Formulas):** probiotic that contains *L. plantarum* 299v; it resists stomach acid and bile salts, adheres to gut lining, promotes intestinal health and function, and may help with constipation.

***L. reuteri* (BioGaia Gastrus):** probiotic that suppresses methanogen activity; it improves symptoms of constipation.

**Atrantil** is a botanical supplement that includes a combination of peppermint, quebracho colorado, and conker tree or horse chestnut. This product is backed by a clinical trial that found significant improvements in several measurements of gut health after just two weeks.

Atrantil may be used in practice alongside rifaximin if a patient does not want to take neomycin.

**Allimax Pro** uses a stabilized form of allicin extracted from raw garlic that inhibits DNA gyrase activity in bacteria. Studies have reported allicin to be effective in reducing cyanogenesis.

**Ideal Bowel Support** is a probiotic containing *Lactobacillus plantarum* 299v. Studies have shown it to adhere to the gut lining after 10 days of supplementation, reducing symptoms of abdominal pain and preventing bacterial translocation.

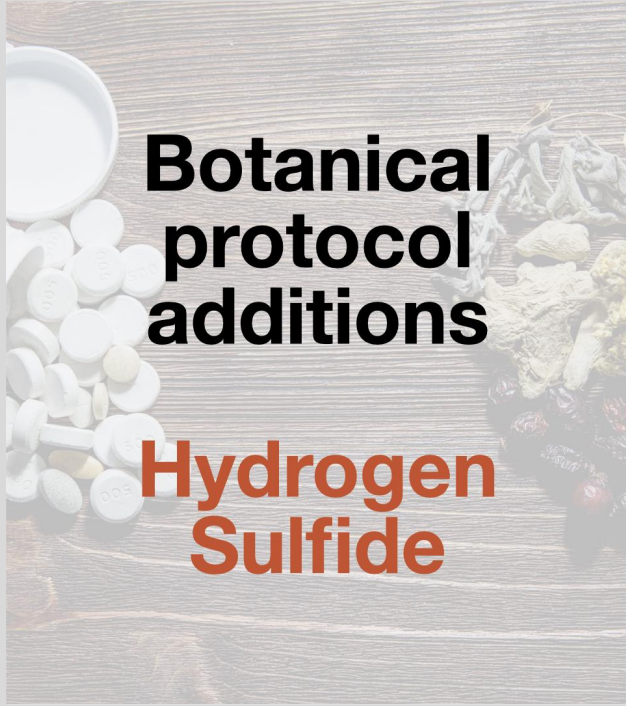
***Limosilactobacillus reuteri*** probiotic has been shown to suppress methanogen activity and improve constipation symptoms. It may also exhibit antifungal properties and reduce proinflammatory cytokines.

## Botanical protocol dosages: Methane

Nutraceutical	Dosage
<b>Atrantil</b>	2 capsules TID at the beginning of meals Maintenance dose: 1–3 capsules per day
<b>Allimax Pro</b>	1 capsule TID with food
<b>Ideal Bowel Support</b>	1 capsule BID; can be taken with food but away from antimicrobials or antibiotics
<b>BioGaia Gastrus (<i>L. reuteri</i>)</b>	1 tablet per day but away from antimicrobials or antibiotics



## CORE BOTANICAL PROTOCOL ADD-ONS FOR HYDROGEN SULFIDE



**Botanical protocol additions**

**Hydrogen Sulfide**

**Molybdenum (Mo-Zyme Forte by Biotics Research):** cofactor for sulfite oxidase enzyme and essential for the breakdown of sulfite to sulfate.

**Hydroxocobalamin (Hydroxo B12 lozenge by Seeking Health):** binds to H<sub>2</sub>S and reduces the biologic activity of H<sub>2</sub>S.

**Bismuth (Pepto Bismol, Bio-HPF):** reduces H<sub>2</sub>S-producing/sulfate-reducing bacteria.

**Zinc acetate (many brands):** binds to H<sub>2</sub>S and replaces potential loss as a result of environmental toxin burden (like glyphosate).

**Activated charcoal (many brands):** binder for endotoxins and H<sub>2</sub>S.

**Korean Red Ginseng (Pure Encapsulations):** suppresses activity of CBS and CSE enzymes, reducing H<sub>2</sub>S production internally.

**Molybdenum** is a trace mineral necessary for turning sulfite into sulfate, which the body uses for beneficial processes. Excess sulfite may exacerbate symptoms in patients with hydrogen sulfide SIBO.

**Hydroxocobalamin (Hydroxy B12)** is a form of vitamin B12 that lowers the level of hydrogen sulfide (H<sub>2</sub>S) in the blood by binding to H<sub>2</sub>S and rendering it less biologically active.

**Bismuth** combines with antibiotics to increase the effectiveness of treatment by reducing H<sub>2</sub>S production or sulfate-reducing bacteria.

**Zinc** binds to H<sub>2</sub>S, which reduces levels in the body. Glyphosate also strongly chelates zinc, further reducing levels.

**Activated charcoal** may be used as a binder for endotoxins and hydrogen sulfide.

**Korean ginseng** has been shown to suppress activity in the CBS and CSE enzymes, thus reducing H<sub>2</sub>S production internally.

## Botanical protocol dosages: Hydrogen Sulfide Excess

Nutraceutical	Dosage
<b>Molybdenum</b>	150 mcg BID with food
<b>Hydroxocobalamin</b>	2000 mcg qAM before meals or on an empty stomach
<b>Bismuth</b>	400–525 mg TID for 4 weeks Bio-HPF: 2 capsules TID before meals
<b>Zinc acetate</b>	60–75 mg daily on an empty stomach or with food if nausea occurs
<b>Activated charcoal</b>	1200–1500 mg daily (can be taken as a single dose or split up) away from food, supplements and medications
<b>Korean red ginseng (aka Panax or Asian ginseng)</b>	400 mg BID with or without food

### Hydrogen sulfide excess in the body

We still do not understand the driving force behind an overproduction of H<sub>2</sub>S in the body, but there are a handful of different theories.

In the body, sulfur is responsible for:

1. Helping detox in the liver and excrete molecules in the urine
2. Assisting in the production of collagen, which forms connective tissues, cell structures, and artery walls
3. Helping synthesize proteins

In the gut, hydrogen sulfide can be produced by a variety of bacteria. It can also be produced in the gut from the enzymatic conversion of the amino acid cysteine. Research suggests that the majority of hydrogen sulfide production occurs in the upper digestive tract—the stomach and small intestine—rather than in the colon.

### Hydrogen sulfide SIBO additional therapies

For hydrogen sulfide excess SIBO, we often use portions of the core SIBO protocol, plus some detox support and support for sulfur metabolism. We also generally test for urine glyphosate and discuss ways to reduce glyphosate exposure. In some cases, we also test for the CBS variants using 23andMe or the Genova Diagnostics methylation plus genomic add-on panel.

Additional therapies for hydrogen sulfide excess SIBO that may be beneficial include:

1. Infrared sauna therapy
2. Epsom salt baths
3. Low-sulfur diet

## COMBINING CORE AND SPECIFIC BOTANICAL TREATMENT PROTOCOLS

Below are examples of how to combine the core botanical SIBO protocol with additional, specific protocols for targeting SIBO type.

The patient who would benefit from the protocol below has intestinal methanogen overgrowth (IMO) with constipation.

### Botanical protocol for IMO + motility

Nutraceutical	Dosage
<b>GI-Synergy</b>	1 packet BID (with breakfast and dinner)
<b>Atrantil</b>	2 capsules TID at the beginning of meals Maintenance dose: 1–3 capsules per day
<b>Interfase Plus</b>	3–4 capsules BID (on an empty stomach)
<b>Ideal Bowel Support®</b>	1 capsule BID; can be taken with food but away from antimicrobials or antibiotics
<b>MotilPro</b>	1–2 capsules TID on an empty stomach
<b>Allimax Pro</b>	1 capsule TID with food

The patient protocol below is designed for someone with hydrogen-dominant SIBO, markers of gut inflammation and immune dysfunction, and low fecal pancreatic elastase.

## Botanical protocol for H2 SIBO + immune + digestive support

Nutraceutical	Dosage
<b>GI-Synergy</b>	1 packet BID (with breakfast and dinner)
<b>SBI Protect</b>	4 capsules BID with or without food
<b>InterFase Plus</b>	3–4 capsules BID (on an empty stomach)
<b>Betaine HCL with pepsin</b>	1–5 650 mg capsules before meals; sensitive patients can use 200 mg capsules
<b>Digestive enzymes</b>	Depends on the manufacturer; take just before meals
<b>Terraflora or Seed (optional)</b>	Terraflora 1 capsule (with lunch); Seed 2 capsules daily

Below is an example of a hydrogen sulfide excess SIBO botanical protocol:

## Botanical protocol for H2S SIBO

Nutraceutical	Dosage
<b>GI-Synergy</b>	1 packet BID (with breakfast and dinner)
<b>InterFase Plus</b>	3–4 capsules BID (on an empty stomach)
<b>Molybdenum</b>	150 mcg BID with food
<b>Hydroxocobalamin</b>	2000 mcg qAM before meals or on an empty stomach
<b>Bismuth</b>	400–525 mg TID for 4 weeks Bio-HPF: 2 capsules TID before meals
<b>Zinc acetate</b>	60–75 mg daily on an empty stomach or with food if nausea occurs
<b>Activated charcoal</b>	1200–1500 mg daily (can be taken as a single dose or divided) away from food, supplements, and medications

## SELECT ALTERNATIVES AND SUBSTITUTIONS FOR BOTANICAL PROTOCOL PRODUCTS

### Alternatives and substitutions

Nutraceutical	Alternative/Substitution
<b>GI-Synergy</b>	<b>Biocidin LSF, capsules or Advanced Formula</b> ( <i>Bio-Botanical Research</i> )
<b>InterFase Plus</b>	<b>Biofilm Defense</b> ( <i>Kirkman Labs</i> ), <b>MC-BFM-1</b> ( <i>Beyond Balance</i> )
<b>Terraflora/Seed</b>	<b>MegaSporeBiotic</b> ( <i>Microbiome Labs</i> ), <b>Ther-Biotic Complete</b> ( <i>Klaire Labs</i> )
<b>MotilPro</b>	<b>Motility Activator</b> ( <i>Integrative Therapeutics</i> ), <b>SIBO-MMC</b> ( <i>Priority One</i> )
<b>Bismuth</b>	<b>Pepti-Guard</b> ( <i>Thorne</i> ), <b>Bio-HPF</b> ( <i>Biotics Research</i> )

## BOTANICAL TREATMENT DURATION BASED ON LACTULOSE BREATH TEST RESULTS

When deciding the duration of the botanical protocol for a particular patient, consider the results of the lactulose breath test (LBT). General duration guidelines are:

## Length of botanical treatment based on LBT hydrogen (H<sub>2</sub>) results

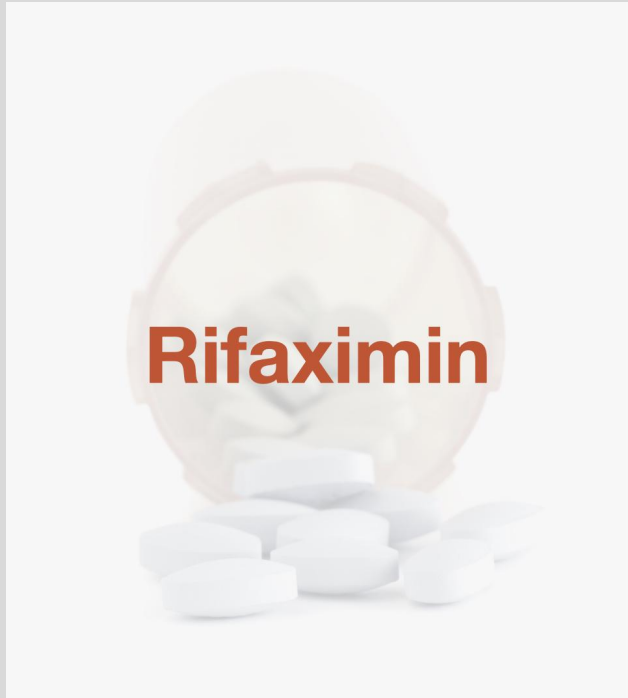
H <sub>2</sub> @80/90 min	Duration
<45 ppm	4 weeks
45-70 ppm	8 weeks
>70 ppm	12 weeks

Recommendations for the duration of the botanical treatment based on LBT methane levels:

## Length of botanical treatment based on LBT methane (CH<sub>4</sub>) results

Presentation	Duration
The highest value on the test is between 10 ppm and 25 ppm	30 days
The highest value on the test is between 25 ppm and 50 ppm	60 days
The highest value on the test is greater than 50 ppm	90 days

## RIFAXIMIN FOR TREATING SIBO



- 1 Not systemically absorbed (*99.6% stays in gut*)
- 2 Very few adverse effects or interactions
- 3 Acts largely in the small intestine (*activated by bile acids*)
- 4 Does not adversely effect colonic flora (*may even have beneficial effect*)

One important note: The brand name medication Xifaxan is not systemically absorbed; 99.6 percent of it stays in the gut. A couple of studies have shown that the generic form of rifaximin has increased systemic absorption compared to Xifaxan. The Xifaxan brand is very expensive, and it is only approved for irritable bowel syndrome with diarrhea (IBS-D).

### Rifaximin is generally safe



Studied for periods up to 2 years at **1,100 mg/d**



**No increase** in rate of infections or development of resistance



Side effects generally similar to **placebo**

### When to consider rifaximin

1. If a patient has failed the botanical protocol
2. If a patient cannot tolerate the botanical protocol

**Common rifaximin dosing regimens**

<b>Population</b>	<b>Dosage</b>
<b>Adults</b>	400 mg TID for 10-14 days
<b>Adults</b>	550 mg TID for 10-14 days
<b>Children</b>	200 mg TID for 10 days
<b>Children</b>	10-30 mg/kg/d for 10 days

**Rifaximin treatment duration based on LBT results**

These guidelines apply if rifaximin is used alone at dosages of 1,200 milligrams per day or 1,650 milligrams per day but should always be considered in the context of the patient presentation:

<b>H2 @80/90 min</b>	<b>Duration</b>
<45 ppm	<b>4 weeks</b>
45-70 ppm	<b>8 weeks</b>
>70 ppm	<b>12 weeks</b>

**Rifaximin + nutraceutical treatment duration based on LBT results**



<b>H2 @80/90 min</b>	<b>Duration</b>
<45 ppm	<b>2 weeks</b>
45-70 ppm	<b>3 weeks</b>
>70 ppm	<b>4 weeks</b>

### Combination treatment considerations

- Rifaximin dose is lowered to 1,200 mg/day.
- Less time may be required than indicated due to increased efficacy of combinations.
- Combination treatment can be more practical since it reduces the high cost of rifaximin.
- Rifaximin is activated by the bile acids in the small intestine, so patients with bile issues might benefit from a two-week lead-in with phosphatidylcholine and bitters to stimulate that bile production.

## DRUG ADDITIONS FOR METHANE



### Drug additions for methane

Standard is **Neomycin** 500 mg BID for 10 days

**Pimentel/Cedars Sinai** trial with metronidazole (Flagyl) with some success > 250 mg TID for 10 days

**Metronidazole** doesn't appear to adversely affect gut microbiota > but not as well tolerated as rifaximin/ neomycin

If you use **neomycin** or **metronidazole** with longer course of rifaximin then limit their use to 10 days

### Addition of neomycin to rifaximin treatment for elevated methane

Treatment	Clinical Response	Breath Test Normal
Rifaximin alone	56%	28%
Neomycin alone	63%	33%
Rifaximin + Neomycin	85%	87%

Adapted from: Low et al. J Clin Gastroenterol. 2010 Sep;44(8):547-50

### Alternative additions for methane

1. *Lactobacillus plantarum* at a dose of 10 billion CFU per day;
2. Atrantil at a dose of two capsules three times a day; and/or

3. A longer course, like 30 days or more, of rifaximin

**Pharmaceutical/combination protocol for SIBO**

Therapeutic Agent	Dosage
<b>Rifaximin</b>	Depends on breath test results
<b>Lauricidin</b>	1 scoop TID with each meal
<b>InterFase Plus</b>	3–4 capsules BID on an empty stomach
<b>Terraflora</b>	1 capsule BID upon rising and before bed
<b>Atrantil (optional)</b>	(Only if methane elevated) 2 capsules TID
<b><i>L.plantarum</i> and/or <i>L.reuteri</i> (optional)</b>	(Only if methane elevated) 10 billion CFU/d
<b>Iberogast (optional)</b>	(Only with bile issues) 20 drops TID with meals
<b>Ox bile (optional)</b>	(Only with bile issues) 100–500 mg with meals

Rifaximin for 2–4 weeks	Dosage
<b>Rifaximin</b>	1200 mg to 1650 mg daily for the first 2–4 weeks
Botanical protocol for 4–8 weeks	See previous slides for dosage
<b>GI-Synergy or Biocidin</b>	Core protocol
<b>Terraflora or Seed</b>	Core protocol
<b>InterFase Plus</b>	Core protocol
<b>Allimax Pro and/or Atrantil (optional)</b>	IMO add-on
<b><i>L.plantarum</i> and/or <i>L.reuteri</i> (optional)</b>	IMO add-on
<b>Iberogast or Ox bile (optional)</b>	Bile issues add-on
<b>Bismuth (optional)</b>	H2S add-on

## TREATING IMPAIRED MOTILITY CONNECTED TO POST-INFECTIOUS IBS

When a patient has positive anti-vinculin and/or anti-CdtB antibody levels on an ibs-smart test, it indicates some post-infectious gastritis as a likely cause of persistent IBS and/or SIBO.

Consider ordering an ibs-smart test for patients with persistent SIBO or IBS that have not responded to initial treatments, have high gas levels, or have a known history of food poisoning. If the ibs-smart test comes back positive, then treatment should focus on supporting and restoring proper small intestine motility and supporting the function of the MMC.

**Prokinetics** stimulate and coordinate gastrointestinal (GI) motility by increasing transit in the GI tract and improving the coordination of GI movement downward. They either inhibit dopamine, which inhibits motility, or they stimulate acetylcholine, which stimulates the GI tract. They may have a laxative effect, although they are not laxatives.

Examples of prokinetics include metoclopramide, cisapride, domperidone or Motilium, erythromycin in low doses, prucalopride, ginger, ginger root, and Iberogast.

The goal of prokinetic therapy is to move food, acid, gas, or stool through and out of the GI organs and encourage the GI muscles to properly contract.

<b>Herbal prokinetics</b>	
<b>Prokinetic</b>	<b>Dose</b>
<b>Iberogast</b>	<b>IBS/dyspepsia:</b> 20 gtts with meals <b>SIBO relapse prevention:</b> 30–60 gtts nightly <b>Symptom management</b> 20–30 gtts TID to QID or PRN <b>Pediatrics:</b> 10–20 gtts TID-QID
<b>Ginger/Ginger root</b>	<b>General:</b> 1000 to 2000 mg daily (up to 6 g QD) <b>SIBO relapse prevention:</b> 1000 to 2000 mg QHS <b>Pediatrics:</b> 250 mg QHS
<b>Products:</b>	<b>MotilPro</b> ( <i>Pure Encapsulations</i> ), <b>Motility Activator</b> ( <i>Integrative Therapeutics</i> ), <b>SIBO-MMC</b> ( <i>Priority One</i> )

**Pharmaceutical prokinetics** may also be used, including **low-dose erythromycin**, **prucalopride** or **Motegrity**, and **low-dose naltrexone**.

## Pharmaceutical prokinetics

Prokinetic	Dose
<b>Low-dose erythromycin</b>	<b>Gastroparesis:</b> 250 mg TID, 30 min before meals (ac) <b>SIBO relapse prevention:</b> 50 or 62.5 mg nightly <b>Symptom management:</b> 50 or 62.5–100 mg 30 min ac <b>Pediatrics:</b> 25 mg (liquid Rx) or cut 150 mg into 1/4 (37.5 mg in an older child)
<b>Prucalopride</b>	<b>Constipation:</b> 2 mg QHS (at night) range 0.5–4 mg <b>SIBO relapse prevention (low dose):</b> 0.5 mg QHS (range 0.25–1 mg) <b>Pediatrics:</b> 0.01 mg/kg
<b>Low-dose naltrexone (LDN)</b>	<b>IBS:</b> 0.5 mg once daily <b>IBD:</b> 4.5 mg daily <b>SIBO relapse prevention:</b> 2.5 mg QHS (diarrhea)/2.5 mg BID or 4.5 mg QHS (constipation) <b>Symptom management:</b> 0.5–5 mg daily <b>Pediatrics:</b> 0.01 mg/kg

## THE ELEMENTAL DIET FOR SIBO TREATMENT

The Elemental Diet is a liquid diet of powdered nutrients in a pre-digested and easily absorbed form, replacing solid food for two weeks (up to three weeks). Studies show an 80 to 84 percent success rate in eradicating SIBO, so it's arguably the most effective SIBO treatment. It is also shown to be safe without risks and complications.

The main ingredients are amino acids, carbohydrates (such as dextrose), fat (may be vegetable oil in prepared formulas, but healthy oils can be used in homemade versions), vitamins, and minerals.

The Elemental Diet should be used alone and as a last resort after rifaximin and botanicals have failed and test results remain unequivocally positive. These patients will often relapse and require retreatment, so continue looking for their underlying cause.

### Drawbacks

- Formulas are expensive
- High in sugar and carbohydrates
- Taste terrible
- Often lead to unintended weight loss

- May lead to oral thrush or *Candida* overgrowth

### Options

- Vivonex Plus
  - Main ingredients: maltodextrin, amino acids, and soybean oil
  - Problems: soybean oil use, only 6 percent fat, and high in sugar
- Absorb Plus
  - Whey protein in addition to amino acids
  - Tapioca as the carbohydrate source
  - Does not contain fat, so must be added
- Physicians' Elemental Diet
  - Also contains maltodextrin, but from tapioca
  - Has a dextrose-free option
  - Free of coloring, corn, fructose, and soy
- Dr. Siebecker's DIY elemental diet formula (see table below)

Nutrient	Ingredient	Notes
<b>Protein</b>	Amino acid powder	Should contain full range of amino acids; dose at 15-20% of total calories per day
<b>Carbohydrate</b>	Honey, dextrose, glucose-flavored liquid, or grape syrup	Should comprise 20-50% of total calories per day
<b>Fat</b>	MCT, coconut oil, Udo's oil, flax oil, avocado oil, macadamia oil	Should comprise 30-65% of calories per day
<b>Vitamins &amp; minerals</b>	Must not contain fiber, food, or anything other than synthetic nutrients	Options: Freeda SCD Multi, Klaire VitaSpectrum Powder, Pure Encapsulations Nutrient 950
<b>Sodium</b>	Sea salt; 1,500 mg/d is adequate daily intake	Can mix with formulas or take separately in water

### Elemental Diet considerations:

- May require periodic re-treatment
- Should not be combined with other treatments


- Best used as a last resort

## DIET DURING SIBO TREATMENT

What should patients eat during SIBO treatments? We recommend eating a **standard Paleo reset diet** or a combination of **low-FODMAP (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) and low-fermentation potential** to help with symptoms during antimicrobial treatments.

The **Bi-Phasic diet** from Dr. Nirala Jacobi is based on the low-FODMAP and specific carbohydrate diet that uses a phased approach to diet and treatment to limit side effects. While we have not used it much in practice, patients who have tried this diet have had positive feedback to share.

## THE IMPORTANCE OF RETESTING



Re-testing is **crucial to success** of treatment

Symptom **improvement** occurs before normalization of breath test

If patient doesn't improve from treatment, doesn't mean treatment didn't work

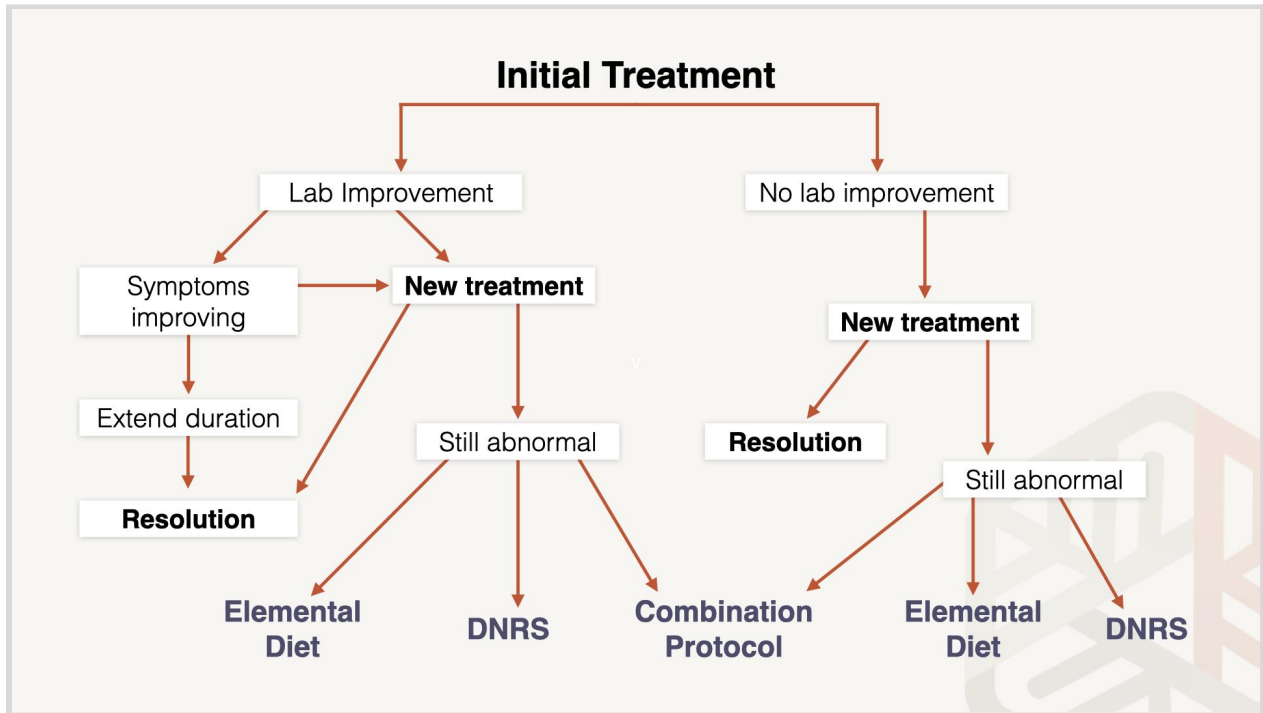
Ask patient to **stop** antimicrobials for at least **2 to 4 weeks before re-test**

Twenty percent or more of controls in a study did not have SIBO symptoms yet were positive for SIBO. Retesting is critical to treating SIBO. It is also possible that a SIBO retest will be negative, but the patient will continue experiencing symptoms. “Test, don't guess.”

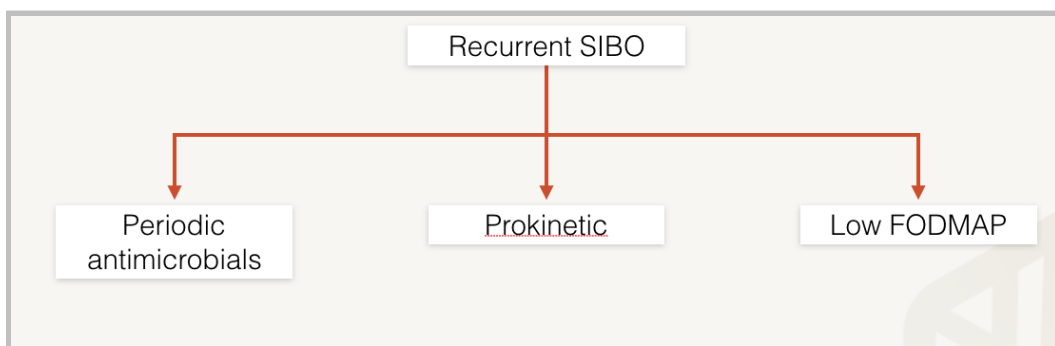
Is the test still positive? SIBO recurrence rate ranges from 44 to 50 percent, likely due to not using high enough doses or long enough durations of treatments. From a Functional Medicine perspective, and if it continues to recur, it probably has to do with an underlying mechanism

that has not been corrected, like gut dysbiosis, parasites, infections, heavy metal toxicity, mold, biotoxins, chronic infections, etc.

### Treatment algorithm

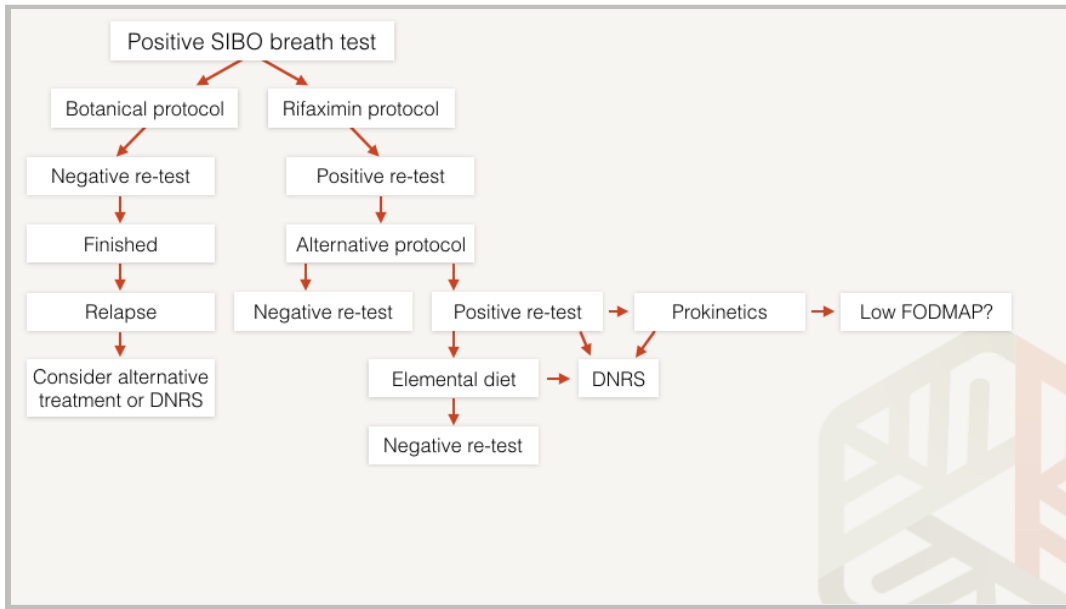


Patients may need periodic retreatment with botanical or rifaximin protocols or a maintenance dose of Atrantil if they have methane-predominant SIBO and constipation. Additional steps can be taken to reduce the likelihood of recurrence.



## OVERALL TREATMENT ALGORITHM





**Note:** Specific protocol guidelines for treating children are different from adults and can be found on the pediatric SIBO and dysbiosis treatment protocol handout.

Finally, diet and antimicrobials are very important for fixing gut problems. However, I think other considerations deserve more attention than they typically get. These include lifestyle factors such as appropriate physical activity, getting enough sleep, and especially managing stress.

Remember, the gut is essentially an extension of the nervous system/brain, and, in fact, some researchers refer to it as the “second brain.” This is why stress management and lifestyle/behavior modification should always be part of a gut protocol.