Eradication & Rebalancing Microbiome Sources

Hey everyone and welcome to Step 2: Eradication and Re-inoculation-The Microbial Matrix.
MY NAME IS BRENNA AND I am a certified holistic health practitioner here on the team here at Optimized Health.
And just to do a quick recap, we have a 3 step process for eradication. Step 1: Testing which we discussed in Week 1. Now that you have your test results in hand, we can move on to step 2: Eradication and Re-inoculation-The Microbial Matrix which is an 8 week period where you eradicate pathogenic bacteria . Step 3 we cover in Week 12 which is when you Replenish the body with vitamins and minerals the body may be deficient in (this is especially necessary if you've had SIBO and/or IBS-D symptoms) & Rebuild the health of the gut lining.

In this module, we're going to cover step 2: Eradication and Re-inoculation-The Microbial Matrix and I'm going to cover 2 things: 1) First, I am going to show you how to take your test results and easily navigate the Eradication & Re-inoculation Microbial Matrix pdf below this video and 2) Secondly I am going to give a brief explanation on why we specifically chose the products we have listed to support detoxification, eradication and re-inoculating the gut with beneficial bacteria in the form of probiotics.
But before we get started with today's module, I do want to remind you that we educate & are not treating.
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INCLUDES WITHOUT LIMITATION, PSYCHIATRY, PSYCHOLOGY, PSYCHOTHERAPY, OR PROVIDING HEALTH CARE TREATMENT, INSTRUCTIONS, DIAGNOSIS, PROGNOSIS OR ADVICE.

I would recommend that as I discuss the different products, you pull up the pdf with all the products so you can become familiar with why we chose each product and how to navigate the page.

So let's start with:
I. Supporting Detoxification and Digestion:

One of the things we start with is boosting stomach acid. Why?

Low Stomach may be one of root causes of IBS symptoms. Why? Low Stomach Acid opens the door to bacterial overgrowth in the small intestine and gut infections (in the stomach such as H. Pylori overgrowth and in the intestines). And research shows a link between IBS and bacterial overgrowth in the small intestine.

In the article "Bacteria and irritable bowel syndrome: The evidence for small intestinal bacterial overgrowth" published in July 2006 in the journal '*Current Gastroenterology Reports',* it states:

" … a growing body of evidence links IBS to the presence of excessive bacteria in the small bowel, called bacterial overgrowth."

" … Further work has also examined bacterial overgrowth in the context of the various symptoms of patients with IBS. These symptom complexes include constipation, diarrhea, and alternating forms of the condition."

'Lee, Hyo-Rang, and Mark Pimentel. "Bacteria and irritable bowel syndrome: the evidence for small intestinal bacterial overgrowth." *Current gastroenterology reports* 8.4 (2006): 305-311.'

https://link.springer.com/article/10.1007/s11894-006-0051-3

1. Low Stomach Acid opens the door to pathogenic overgrowth and gut infections (in the stomach such as H. Pylori overgrowth and in the intestines)
2. Low Stomach Acid opens the door to nutrient deficiencies in the body due to poor digestion and absorption of nutrients

3. Contrary to popular belief, heartburn, acid reflux and GERD are NOT due to too much acid but too little. And low stomach acid is becoming more and more of a common widespread problem.
4. Stomach acid drops as you age
5. The methods for addressing GERD (regular bouts of acid reflux and heart burn) are harmful to your body (PPIs)
6. Drugs to lower stomach acid DO NOT fix the problem and can actually worsen the situation, creating even more of the same symptoms of acid reflux, heartburn and GERD.

We address low stomach acid through supplementation for a while. We recommend supplementation with HCl w/ Pepsin throughout the 8 week recipe plans. You may or may not feel you need to continue supplementing after finishing this program. We will give you recommendations on resources involving continuing to take HCl in week 12.

II. ERADICATION

Okay! So now we move into the section on Eradication! So before we discuss the different products we recommend, let's dig into a little scientific research!

According to research, Herbal Antimicrobials are JUST as effective as antibiotics in clinical trials AND without any side effects.

In the 2014 article "Herbal Therapy Is Equivalent to Rifaximin for the Treatment of Small Intestinal Bacterial Overgrowth" published in Global Advances in Health and Medicine, it states: "Herbal therapies are at least as effective as rifaximin for resolution of SIBO by LBT. Herbals also appear to be as effective as triple antibiotic therapy for SIBO rescue therapy for rifaximin non-responders."

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4030608/

"Between 4% and 78% of patients with IBS and 1% and 40% of controls have SIBO;"
Ghoshal, Uday C., Ratnakar Shukla, and Ujjala Ghoshal. "Small intestinal bacterial overgrowth and irritable bowel syndrome: a bridge between functional organic dichotomy." *Gut and liver* 11.2 (2017): 196.

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C44&q=Small+intestinal+bacterial+overgrowth+and+irritable

+bowel+syndrome%3A+a+bridge+between+functional+organic+dichotomy&btnG=

Antibiotics: High reoccurrence rate

High SIBO reoccurrence after antibiotic therapy:
In the 2008 study “Small intestinal bacterial overgrowth recurrence after antibiotic therapy” published in the American journal of gastroenterology, it states: “…patients showed positivity to GBT (Glucose Breath Test) at 3, 6, and 9 months after successful antibiotic treatment … “ and “GBT (Glucose Breath Test positivity recurrence rate was high after antibiotic treatment.”
(2008). Small intestinal bacterial overgrowth recurrence after antibiotic therapy. Am J Gastroenterol, 103(8), 2031-5

https://pubmed.ncbi.nlm.nih.gov/18802998/

In a (2011) article “Antibiotics for the Treatment of Irritable Bowel Syndrome” Gastroenterology & Hepatology states
“…a recent study by Valentin and associates found that 7 of 11 healthy volunteers developed rifampin-resistant staphylococci after taking rifaximin …”

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3264894/#!po=46.3235

In the 2011 article by Valentin "Rifaximin intake leads to emergence of rifampin-resistant staphylococci." Published in the *Journal of Infection* 62.1 it states “Our data show that rifampin-resistant staphylococci emerge after intake of rifaximin. Since rifampin resistance is associated with treatment failure in staphylococcal foreign body infections, we conclude that rifaximin should be avoided in patients at risk for these infections.”

Valentin, Thomas, et al. "Rifaximin intake leads to emergence of rifampin-resistant staphylococci." *Journal of Infection* 62.1 (2011): 34-38.

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C44&q=https%3A%2F%2Fpubmed.ncbi.nlm.nih.gov%2F21073894%2F&btnG=#d=gs_qabs&t=1671155932958&u=%23p%3DiaTUEp_Aj5sJ

Antimicrobials:

These are what eradicate the clear out the pathogenic bacteria, viruses, parasites, etc.
As we mention in other modules, an over abundance of pathogenic bacteria and too little (or non existent levels) of beneficial bacteria creates dysbiosis which contributes to Leaky Gut, SIBO etc.and opens the door for parasites to take root in the gut.
What supplements we recommend you take largely depends on your personal test results.

Some of the herbs we recommend for eradication are:

Eradication Antimicrobial Herbs:

peppermint oil (IBGuard)
Barberry Extract (Berberis aristata, Berberis asiatica, and Berberis vulgaris) (root & bark) (found in Berberine)
Goldenseal Extract (Hydrastis canadensis) (root) (found in Berberine)
Oregano Extract (Origanum vulgare) (leaf)
Oregon Grape Extract (Mahonia aquifolium) (root) (found in Berberine)
Chinese Goldthread Extract (Coptis chinensis) (root)
Yerba Mansa Extract (Anemopsis californica) (leaf)
Undecylenic Acid (as calcium undecylenate)
Caprylic Acid (as magnesium caprylate)
Uva Ursi Extract
Cat's Claw Extract
Pau D'Arco Extract
Wormwood Extract
Black Walnut Extract
Olive leaf Extract (leaf)
Garlic Extract
Cloves
Thyme
Allicin

Liver Support Herbs:
milk thistle
dandelion root
chanca piedra
turmeric.

1. Biofilm Disrupter

Biofilm:

In the 2010 research article “ANTIBIOTIC RESISTANCE: Biofilm Dispersing Agent Rejuvenates Older Antibiotics” published in Environmental Health Perspectives, it states:
“An estimated 75% of bacterial infections involve biofilms, surface-attached colonies of bacteria that are protected by an extracellular matrix.1 Bacteria protected within biofilms are up to 1,000 times more resistant to antibiotics than if they were free-floating (planktonic),2 which severely complicates treatment options. Rather than searching for better antibiotics, researchers have discovered that small molecules3 known as 2-amino-imidazoles disrupt biofilms, making antibiotic-resistant strains of bacteria more vulnerable to conventional drugs.4 “

Potera, C. (2010). ANTIBIOTIC RESISTANCE: Biofilm Dispersing Agent Rejuvenates Older Antibiotics. Environmental Health Perspectives, 118(7), A288

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2920928/

In a 2015 Periodical Review entitled the “Prevention of microbial communities: novel approaches based natural products” published in the Current pharmaceutical biotechnology, it stated
“About 80% of human infections affecting the gastrointestinal … systems … are caused by biofilm-associated microorganisms.”

https://pubmed.ncbi.nlm.nih.gov/25594287/

In the 2014 research article “Bacterial Biofilms: Survival Mechanisms and Antibiotic Resistance” published in the Journal of Bacteriology and Parasitology it states:
“Clinical biofilm infections have shown that treatment with antibiotics is not a complete solution as symptoms usually recur even after repeated treatments. The antibiotic therapy eliminates the planktonic cells, but the sessile forms are resistant and continue to propagate within the biofilm [19].”

Sources:

https://bellalindemann.com/blog/sibo-series-part-3-treatment

https://www.byronherbalist.com.au/bacterial-infection/sibo-methane-dominant-treatment-plan/

https://feedmephoebe.com/prebiotics-probiotics-sibo-treatment-jason-hawrelak/

Peppermint oil (IBGuard)

IB guard contains peppermint oil which has been shown to have strong antibacterial and antioxidant activities. It also prevents Candida overgrowth.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5486128/

In the article “Antibacterial and antioxidant activities of Mentha piperita L “ published in the scientific journal ‘Arabian Journal of Chemistry’ it states “It (IB Guard) was found that the distilled concentrations of essential oil inhibited the growth of microorganisms and the results were comparable with those of antibiotic gentamycin. “

In the article “Inhibition by the essential oils of peppermint and spearmint of the growth of pathogenic bacteria” published on January 1, 2001 in the journal ‘*Microbios’,* it states:

“The effects of the, essential oils of peppermint (Mentha piperita L.), spearmint Mentha spicata L.) and Japanese mint (Mentha, arvensis L.), of four major constituents of the esssential oil of peppermint, and of three major constituents of the essential oil of spearmint, on the proliferation of Helicobacter pylori, Salmonella enteritidis, Escherichia coli O157:H7, methicillin-resistant Staphylococcus aureus (MRSA) and methicillin sensitive Staphylococccus aureus (MSSA) were examined. The essential oils and the various constituents inhibited the proliferation of each strain in liquid culture in a dose-dependent manner. The antibacterial activities varied among the bacterial species tested but were almost the same against antibiotic-resistant and antibiotic-sensitive strains of Helicobacter pylori and S. aureus. Thus, the essential oils and their constituents may be useful as potential antibacterial agents for inhibition of the growth of pathogens.”

Imai, Hirokazu, et al. "Inhibition by the essential oils of peppermint and spearmint of the growth of pathogenic bacteria." *Microbios* 106 (2001): 31-39.

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C44&q=Inhibition+by+the+essential+oils+of+peppermint+and+spearmint+of+the+growth+of+pathogenic+bacteria.&btnG=#d=gs_qabs&t=1671651891607&u=%23p%3Dn0PTN9VnBJEJ

The efficacy of using peppermint oil with digestive issues is further exemplified in scientific research. The medical journal Gastroenterology & Hepatology states that:
“Overall, the formulation seemed to have a more striking effect in patients with more severe or unbearable symptoms. In terms of the frequency of IBS symptoms, it was associated with a 30% reduction in severe or unbearable symptoms at 24 hours, whereas the reduction with placebo was 21%. The difference between arms was not statistically significant at this point. However, at 4 weeks, this difference reached statistical significance, with peppermint oil demonstrating a significantly greater reduction in the number of severe or unbearable symptoms vs placebo, at 66% and 42%, respectively (P=.0212). As for the intensity of IBS symptoms, patients in the peppermint oil arm reported a 40% reduction in severe or unbearable abdominal pain intensity after 24 hours, compared with a 30% reduction with placebo. This numerical trend did not reach statistical significance. However, after 4 weeks, the reduction in unbearable abdominal pain intensity was 79% with peppermint oil, compared with 40% with placebo, and this difference was statistically significant. Looking at individual IBS symptoms, peppermint oil was associated with a favorable trend over 4 weeks of use across all 8 unbearable or severe symptoms, with continued improvements observed over time. For most symptoms, the response rate approximately doubled from the 24-hour point to the 4-week time point.”

According to the Peer Review Journal ‘Practical Gastro’ I quote:
“IBgard® capsules contain solid-state microspheres of peppermint oil, including its principal component l-Menthol, plus fiber and amino acids (from gelatin protein), in a unique delivery system.
With its patented Site-Specific Targeting (SST®) technology pioneered by IM HealthScience, IBgard® capsules release Ultramen®, an ultrapurified peppermint oil, quickly and reliably to the small intestine, where it is designed to release over 4 hours in a sustained release manner.2 The food nutrients in IBgard® (peppermint oil along with fiber and amino acids) may help reduce the low-grade, localized, often temporary, reversible inflammation found in some

IBS patients and help normalize gut mucosal barrier function. Additionally, peppermint oil has been shown to help normalize intestinal transit time.6

IBgard® previously was studied in a pivotal, randomized, placebo-controlled, double- blinded, multi-center trial called IBSRESTTM †† (Irritable Bowel Syndrome Reduction Evaluation and Safety Trial). Patients suffering from IBS-D and IBS-M (alternating IBS-C and IBS-D) were included in the study. This important study was presented at DDW in May 2015 to a standing-room-only audience. The study findings were accepted after peer review and then published in the February 2016 issue of Digestive Diseases and Sciences, a leading, peerreviewed scientific journal.2,†† The data showed that IBgard® demonstrated a statistically significant reduction in the Total IBS Symptom Score (TISS) in as early as 24 hours and at four weeks. The TISS represents a composite score of eight individual IBS symptoms.7 In a secondary analysis, IBgard® also showed efficacy among IBS-M patients.8 IBS-M has been observed to represent up to 74% of IBS patients.9,†

Barberry Extract (Berberis aristata, Berberis asiatica, and Berberis vulgaris) (root & bark)

In the article ‘"Phyto-chemical and pharmacological applications of Berberis aristata” published in July 2012 in the journal ‘*Fitoterapia’ is states:*

“The plant is useful as anti-pyretic, anti-bacterial, anti-microbial, anti-hepatotoxic, anti-hyperglycaemic, anti-cancer, anti-oxidant and anti-lipidemic agent.”

Potdar, Dipti, R. R. Hirwani, and Sivakami Dhulap. "Phyto-chemical and pharmacological applications of Berberis aristata." *Fitoterapia* 83.5 (2012): 817-830.

https://www.sciencedirect.com/science/article/abs/pii/S0367326X12001190

Rahimi-Madiseh, Mohammad, et al. "Berberis vulgaris: specifications and traditional uses." *Iranian Journal of Basic Medical Sciences* 20.5 (2017): 569.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5478785/

Goldenseal Extract (Hydrastis canadensis) (root)

‘Antibacterial Activity and Alkaloid Content of *Berberis thunbergii*, *Berberis vulgaris* and *Hydrastis canadensis’*

Villinski, Jacquelyn, et al. "Antibacterial activity and alkaloid content of Berberis thunbergii, Berberis vulgaris and Hydrastis canadensis." *Pharmaceutical Biology* 41.8 (2003): 551-557.

https://www.tandfonline.com/doi/abs/10.1080/13880200390500768

Oregano:

Saeed, Sabahat, and Perween Tariq. "Antibacterial activity of oregano (Origanum vulgare Linn.) against gram positive bacteria." *Pakistan journal of pharmaceutical sciences* 22.4 (2009): 421-425.

https://go.gale.com/ps/i.do?id=GALE%7CA295445582&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=1011601X&p=AONE&sw=w&userGroupName=anon%7E2b983b7a

Oregano oil has been shown to inhibit the growth of viruses:

Mediouni, S et al. “Oregano Oil and Its Principal Component, Carvacrol, Inhibit HIV-1 Fusion into Target Cells.” *Journal of virology* vol. 94,15 e00147-20. 16 Jul. 2020, doi:10.1128/JVI.00147-20

https://pubmed.ncbi.nlm.nih.gov/32461309/

Karakaya, Sibel, et al. "Antioxidant and antimicrobial activities of essential oils obtained from oregano (Origanum vulgare ssp. hirtum) by using different extraction methods." *Journal of medicinal food* 14.6 (2011): 645-652

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C44&q=Activities+of+Essential+Oils+Obtained+from+Oregano+%28Origanum+vulgare+ssp.+hirtum%29+by+Using+Different+Extraction+Methods&btnG=#d=gs_qabs&t=1672707469232&u=%23p%3DXItk91LYDfAJ

Oregon Grape Extract (Mahonia aquifolium) (root)

"Mahonia root and stem bark have long been considered to have anti-inflammatory, anti-bacterial, anti-fungal activity …"

Rackova, Lucia, et al. "Free radical scavenging activity and lipoxygenase inhibition of Mahonia aquifolium extract and isoquinoline alkaloids." *Journal of inflammation* 4.1 (2007): 1-7.

https://journal-inflammation.biomedcentral.com/articles/10.1186/1476-9255-4-15

Chinese Goldthread Extract (Coptis chinensis) (root)

"…traditional Chinese herbal medicines have anti-inflammatory and antibacterial effects and can thus be used in treatment of *H. pylori* infection."

Ma, Feng, et al. "Screening test for anti-Helicobacter pylori activity of traditional Chinese herbal medicines." *World journal of gastroenterology: WJG* 16.44 (2010): 5629.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2992683/

Yerba Mansa Extract (Anemopsis californica) (leaf)

"Among the plant extracts, the boldo, hops, licorice and yerba mansa exhibited a strong antibacterial action at all three ethanol concentrations."

Wendakoon, Chitra, Peter Calderon, and Daniel Gagnon. "Evaluation of selected medicinal plants extracted in different ethanol concentrations for antibacterial activity against human pathogens." *Journal of Medicinally Active Plants* 1.2 (2012): 60-68.

Undecylenic Acid (as calcium undecylenate)

"Calcium Undecylenate is the calcium salt of undecylenic acid, an 11 carbon mono-unsaturated fatty acid with broad-spectrum antifungal

activity. Undecylenic acid inhibits the morphogenesis of Candida albicans to its invasive fungal form and inhibits the conversion of unicellular yeast to their hyphal form."

National Center for Biotechnology Information. "PubChem Compound Summary for CID 91886408, Calcium undecylenate" *PubChem*, https://pubchem.ncbi.nlm.nih.gov/compound/Calcium-undecylenate. Accessed 2 January, 2023.

Caprylic Acid (as magnesium caprylate)

"Caprylic acid and lauric acid (MCFS) have potential anticandidal activity against *C. albicans*. Caprylic acid has the highest antifungal potential at MIC of 40µg/ml."

Akula, Satya Tejaswi, et al. "Antifungal efficacy of lauric acid and caprylic acid–Derivatives of virgin coconut oil against Candida albicans." *Biomedical and Biotechnology Research Journal (BBRJ)* 5.2 (2021): 229.

https://www.bmbtrj.org/article.asp?issn=2588-9834;year=2021;volume=5;issue=2;spage=229;epage=234;aulast=Akula

Uva Ursi Extract

"Aqueous extracts of bearberry have been shown to alter the hydrophobicity of *Escherichia coli* (Türi, Türi, Anuuk, & Arak, 1999) and *Helicobacter pylori* (Anuuk et al., 1999). Furthermore, these extracts also reportedly display antimicrobial activity against a range of bacteria, a feature usually attributed to the arbutin fraction found in the herb …"

Dykes, Gary A., Ryszard Amarowicz, and Ronald B. Pegg. "An antioxidant bearberry (Arctostaphylos uva-ursi) extract modulates surface hydrophobicity of a wide range of food-related bacteria: implications for functional food safety." *Food Control* 14.7 (2003): 515-518.

https://www.sciencedirect.com/science/article/abs/pii/S095671350200110X

Cat's Claw Extract

“Cat’s claw (*Uncaria tomentosa* (Willd. ex Schults) DC.), a plant that is exceptionally rich in phytochemicals, has been used for centuries by the indigenous people of South and Central America as a therapeutic and is currently widely exported for medicinal purposes. Extracts and individual components have shown considerable potential as antibacterials in the literature.”

Blanck, Jason J., et al. "Comprehensive Review of the Components in Cat’s Claw (Uncaria tomentosa) and Their Antibacterial Activity." *AppliedChem* 2.1 (2022): 1-29.

https://www.mdpi.com/2673-9623/2/1/1

Pau D'Arco Extract

“The south-american tree *Tabebuia avellanedae* (Bignoneaceae) is known in the popular medicine as *Ipê-Roxo, Pau D'Arco, Lapacho*, among others [1,2]. For many decades, preparations made with this plant were used in South and North America as antineoplasic, antifungal, antiviral, antimicrobial, antiparasitical and anti-inflammatory treatment [1-5].”

Pereira, Eliezer Menezes, et al. "Tabebuia avellanedae naphthoquinones: activity against methicillin-resistant staphylococcal strains, cytotoxic activity and in vivo dermal irritability analysis." *Annals of Clinical Microbiology and Antimicrobials* 5.1 (2006): 1-7

“A mixture of ellagitannins isolated from P. granatum and two naphthoquinones isolated from T. avellanedae demonstrated antibacterial activity against all S. aureus strains tested… The results indicate that these natural products can be effective potential candidates for the development of new strategies to treat MRSA infections.”

Machado, T. B., et al. "In vitro activity of Brazilian medicinal plants, naturally occurring naphthoquinones and their analogues, against methicillin-resistant Staphylococcus aureus." *International journal of antimicrobial agents* 21.3 (2003): 279-284.

https://www.sciencedirect.com/science/article/abs/pii/S0924857902003497

“Tabebuia avellanedae is commonly used for the treatment of peptic ulcers.”

Twardowschy, André, et al. "Antiulcerogenic activity of bark extract of Tabebuia avellanedae, Lorentz ex Griseb." *Journal of ethnopharmacology* 118.3 (2008): 455-459

https://www.sciencedirect.com/science/article/abs/pii/S0378874108002584

Wormwood Extract

“Data obtained from the present study showed that the alcoholic extract of Artemisia absinthiummay lead to a decline in the number of Syphacia eggs in the feces with minimal side effects. The extract of this plant can probably be used as a suitable alternative in the treatment of some parasitic diseases.”

Youssefi, M. R., et al. "Antiparasitic efficacy of worm wood (Artemisia absinthium) alcoholic extract on syphacia obvolata." (2012): 47-50.

https://www.sid.ir/paper/157937/en

“Artemisinin, a sesquiterpene phytolactone derived from Artemisia annua, is a potent antimalarial compound with promising anticancer properties…”

Tin, Antony S et al. “Antiproliferative effects of artemisinin on human breast cancer cells requires the downregulated expression of the E2F1 transcription factor and loss of E2F1-target cell cycle genes.” *Anti-cancer drugs* vol. 23,4 (2012): 370-9. doi:10.1097/CAD.0b013e32834f6ea8

https://pubmed.ncbi.nlm.nih.gov/22185819/

This study showed worm paralysis and death from common wormwood derivatives:

Beshay, E V N. “Therapeutic efficacy of Artemisia absinthium against Hymenolepis nana: in vitro and in vivo studies in comparison with the anthelmintic praziquantel.” *Journal of helminthology* vol. 92,3 (2018): 298-308. doi:10.1017/S0022149X17000529

https://pubmed.ncbi.nlm.nih.gov/28606189/

In this study “Steroid-sparing effect of wormwood (Artemisia absinthium) in Crohn's disease: a double-blind placebo-controlled study” published in 2007 in the journal ‘*Phytomedicine : international journal of phytotherapy and phytopharmacology*’ it states:

“In this double-blind study carried out at five sites in Germany, 40 patients suffering from Crohn's disease receiving a stable daily dose of steroids at an equivalent of 40 mg or less of prednisone for at least 3 weeks were administered a herbal blend containing wormwood herb (3 x 500 mg/day) or a placebo for 10 weeks.”

So 20 we’re administered the herbal
blend contains wormwood and 20 were in a control group.

“The initial stable dose of steroids was maintained until week 2, after that a defined tapering schedule was started so that at the start of week 10 all the patients were free of steroids. At the end of week 10 the trial medication was also discontinued. There was a steady improvement in CD symptoms in 18 patients (90%) who received wormwood in spite of tapering of steroids … After 8 weeks of treatment with wormwood there was almost complete remission of symptoms in 13 (65%) patients in this group as compared to none in the placebo group. This remission persisted till the end of the observation period that was week 20, and the addition of steroids was not necessary. In two (10%) patients did the re-starting of corticoids become necessary? On the other hand, the CD conditions of the patients who received the placebo deteriorated after the tapering of steroids, and re-starting steroids became necessary in 16 (80%) patients in this group after week 10. These results strongly suggest that wormwood has a steroid sparing effect.

Omer, B et al. “Steroid-sparing effect of wormwood (Artemisia absinthium) in Crohn's disease: a double-blind placebo-controlled study.” *Phytomedicine : international journal of phytotherapy and phytopharmacology* vol. 14,2-3 (2007): 87-95. doi:10.1016/j.phymed.2007.01.001

https://pubmed.ncbi.nlm.nih.gov/17240130/

Black Walnut Extract

Black Walnut has antibacterial activities:

In the article "Identifying antibacterial compounds in black walnuts (Juglans nigra) using a metabolomics approach" published in 2018 in the journal '*Metabolites*', it states:

"the kernel extraction of black walnuts has been linked to antibacterial properties [12,13,14,15,16,17,18]. The stem bark extraction of English walnut (*Juglans regia* L.) has been reported to exhibit the antibacterial activity against methicillin-resistant *Staphylococcus aureus* [19]."

Ho, Khanh-Van, et al. "Identifying antibacterial compounds in black walnuts (Juglans nigra) using a metabolomics approach." *Metabolites* 8.4 (2018): 58.

https://www.mdpi.com/2218-1989/8/4/58

Black Walnut has anti fungal activities:

"MIC (minimum inhibitory concentration) values for juglone (the simple naphthoquinone from unripe black walnut hulls) showed it to have moderate antifungal activity and to be as effective as certain commercially available antifungal agents such as zinc undecylenate and selenium sulfide."

Clark, Alice M., Tannis M. Jurgens, and Charles D. Hufford. "Antimicrobial activity of juglone." *Phytotherapy Research* 4.1 (1990): 11-14.

https://onlinelibrary.wiley.com/doi/abs/10.1002/ptr.2650040104

Olive leaf Extract (leaf)

Antimicrobial and Lowers H. Pylori Overgrowth

In the article "Antimicrobial activity of commercial Olea europaea (olive) leaf extract" published in 2009 in the *International journal of antimicrobial agents*

"…olive leaf extract may have a role in regulating the composition of the gastric flora by selectively reducing levels of *H. pylori* and *C. jejuni*."

Sudjana, Aurelia N., et al. "Antimicrobial activity of commercial Olea europaea (olive) leaf extract." *International journal of antimicrobial agents* 33.5 (2009): 461-463.

https://www.sciencedirect.com/science/article/abs/pii/S0924857908005542

Thyme:

Antimicrobial

Soleimani, Mohsen, et al. "Phenolic compounds and antimicrobial properties of mint and thyme." *Journal of Herbal Medicine* (2022): 100604.
https://www.sciencedirect.com/science/article/abs/pii/S2210803322000732

In the article "Chinese herbal medicine for the treatment of small intestinal bacterial overgrowth (SIBO): a protocol for systematic review and meta-analysis" published in 2020 in the journal '*Medicine',* it states:

"There is accumulating evidence demonstrating the antimicrobial properties of a growing number of herbs including garlic, black cumin, cloves, cinnamon, thyme …"

Ren, Xuetong, et al. "Chinese herbal medicine for the treatment of small intestinal bacterial overgrowth (SIBO): a protocol for systematic review and meta-analysis." *Medicine* 99.51 (2020).

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7748159/

Garlic Extract:
Garlic is a true superstar in the Antimicrobial realm.

In the Brazilian Journal of Microbiology, the article "Antimicrobial activity of some of the south-Indian spices against serotypes of Escherichia coli, Salmonella, Listeria monocytogenes and Aeromonas hydrophila" stated I quote: "Garlic extract showed excellent antibacterial activity against all the test organisms, except L. monocytogenes."

And the article entitled "In vitro evaluation of the synbiotic effect of probiotic Lactobacillus strains and garlic extract against Salmonella species" published in

the journal LWT Volume 153, January 2022, 112439, demonstrated synbiotic effect garlic extract and lactobacillus probiotics had against Salmonella.

There is serious SO MUCh RESEARCH on the incredible effects of garlic extract as an anti-microbial. Articles on garlic benefits ate published in the Journal The American Society for Microbiology, Journal of International Medical Research , Naturé, Frontiers in Microbiology etc
You can check out these articles in these journals in the sources below.

• DO NOT TAKE GARLIC EXTRACT IF YOU TESTED POSITIVE TO SIBO b. (Weeks 1-4)

Cloves:

Research shows cloves have powerful antibacterial, antiviral and antifungal activities along with being a powerful antioxidant.

In the article “Clove (Syzygium aromaticum): a precious spice’ published February 14 in the journal ‘*Asian Pacific journal of tropical biomedicine* vol. 4,2’, it states:

“The antioxidant and antimicrobial activity of clove is higher than many fruits, vegetables and other spices and should deserve special attention.”

Cortés-Rojas, Diego Francisco et al. “Clove (Syzygium aromaticum): a precious spice.” *Asian Pacific journal of tropical biomedicine* vol. 4,2 (2014): 90-6. doi:10.1016/S2221-1691(14)60215-X

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3819475/

Allicin:

Quotes from article “Allicin: chemistry and biological properties” published 2014 in the journal ‘*Molecules’*, it states:

“Allicin (diallylthiosulfinate) is a defence molecule from garlic (*Allium sativum* L.) with a broad range of biological activities…”

“In a dose-dependent manner allicin can inhibit the proliferation of both bacteria and fungi or kill cells outright, including antibiotic-resistant strains like methicillin-resistant *Staphylococcus aureus* (MRSA). Furthermore, in mammalian cell lines, including cancer cells, allicin induces cell-death and inhibits cell proliferation.”

Borlinghaus, Jan et al. “Allicin: chemistry and biological properties.” *Molecules (Basel, Switzerland)* vol. 19,8 12591-618. 19 Aug. 2014, doi:10.3390/molecules190812591

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6271412/

FC-Cidal and Dysbiosis:

In the study (approved by the Johns Hopkins University (Baltimore, Maryland) Internal Review Board) “Herbal therapy is equivalent to rifaximin for the treatment of small intestinal bacterial overgrowth” published in 2014 in the journal ‘*Global advances in health and medicine*’, herbal therapy was compared to rifaximin usage.

“Subjects with newly diagnosed SIBO by LBT were given two open-label treatment choices based upon individualized treatment preference; either two 200 mg rifaximin tablets three times daily (TID) or 2 capsules twice daily of the following commercial herbal preparations; Dysbiocide and FC Cidal (Biotics Research Laboratories, Rosenberg, Texas) or Candibactin-AR and Candibactin-BR (Metagenics, Inc, Aliso Viejo, California) for 4 consecutive weeks immediately followed by a repeat LBT.”

“In our study, we demonstrated that 46% of patients normalized their LBT with herbal therapy. There was no statistical difference between antimicrobial herbs (46%) and rifaximin (34%) (P=.24). Patients were offered the choice of either therapy. SIBO tends to be a recurrent disease, and frequent antibiotic use may have longterm adverse effects on the gut microbiome and be costly; thus, herbal therapy may be a reasonable treatment option for patients with SIBO. In our study, the side effect profile of herbs when compared to rifaximin was not statistically different with a P=.22. However, the prevalence of side effects in the Rifaximin group was 9% (6/67) including *C difficile* and 2 non-C *difficile*-associated diarrhea. In the herbal group, only 1 case of non-C difficle–associated diarrhea (1%) was observed. These observations are contrary to popular beliefs. Perhaps the herbal therapies are less disruptive to the gut

microbiome and while producing efficacy in resolving SIBO there appears to be less risk of *C difficle* …"

"The fear of bacterial resistance including opportunistic infections such as *Clostridium difficile* raises concerns among recurrent antibiotic users. The rifaximin non-responders who received herbal therapy were equally successful in resolving SIBO via the LBT as were triple antibiotics, which had much higher cost and risk of toxicity. Thus, herbal therapy appears to be effective in the treatment of SIBO patients that is initially refractory to rifaximin. Patients who were treated with herbs were not different than those who received rifaximin with respect to the number of predisposing factors for SIBO, and thus the equivalence in response was not due to disparities in underlying conditions."

Chedid, Victor et al. "Herbal therapy is equivalent to rifaximin for the treatment of small intestinal bacterial overgrowth." *Global advances in health and medicine* vol. 3,3 (2014): 16-24. doi:10.7453/gahmj.2014.019

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4030608/

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Phages:

Used for years in Europe but got lost in the background after WWII when antibiotics came on the scene.

In the article ""Phage treatment of human infections" published in 2011 in the journal '*Bacteriophage', it states:*

"Phages as bactericidal agents have been employed for 90 years as a means of treating bacterial infections in humans as well as other species, a process known as phage therapy."

"The viruses of bacteria were discovered in 1915 by Frederick Twort.12 The "bacteriophage" era, however, did not begin until the seminal publication demonstrating "un bactériophage obligatoire" by Félix d'Hérelle in 1917.13 Microbiologists subsequently began to incorporate the idea of phages into their world view, with phage therapy almost immediately coming to play a central role in the development of the field."

“Phage therapy involves the targeted application of bacteriophages that, upon encounter with specific pathogenic bacteria, can infect and kill them. As typically practiced, phages then lyse those bacteria, releasing virion progeny that can continue the cycle, including migrating to other sites of infection anywhere in the body. The actual phage-mediated bacterial killing, however, occurs well prior to the lysis step—e.g., such as in the first minutes of infection for a phage such as phage T4 1—as the phage converts the cell into a factory for making new phages. Phages are unique among antibacterial agents in their ability to increase their numbers when in the presence of bacterial targets. Of similar importance, phages only minimally impact non-target bacteria or body tissues.”

Abedon, Stephen T., et al. "Phage treatment of human infections." *Bacteriophage* 1.2 (2011): 66-85.

https://www.tandfonline.com/doi/full/10.4161/bact.1.2.15845

In the article "Bacteriophage therapy: a regulatory perspective” in the ‘*Journal of Antimicrobial Chemotherapy’,* it states:

“Co-discovered by Twort and d'Hérelle, phages have been used in medicine since 1919, a decade before the discovery of antibiotics. The first scientific article describing bacteriophage therapy was published in 1921.3 Although bacteriophage therapy was largely replaced by antibiotics in Western countries after the Second World War, it remained a popular treatment throughout the 20th century in Eastern Europe (Poland) and in the former Soviet Union (Georgia, Russia).”

Pelfrene, Eric, et al. "Bacteriophage therapy: a regulatory perspective." *Journal of Antimicrobial Chemotherapy* 71.8 (2016): 2071-2074.

https://academic.oup.com/jac/article/71/8/2071/2237822

III. Re-inoculation Probiotics - Microbial Matrix
EXPLANATION: Please locate the pathogenic bacteria you found on your test as described in the video and purchase the specific probiotic strains for your specific strains. If the probiotics overlap for whatever reason DO NOT purchase

them twice. Simply purchase ONE round for 8 weeks as described in the directions below.

Spore Probiotics aka Soil Based

In th **Spore Probiotics aka Soil Based**

In the article “Bacillus spp. spores—a promising treatment option for patients with irritable bowel syndrome” in the journal’*Nutrients’, it states:*

“In this study we compared the effects of treatment with a spore-based probiotic mixture of five *Bacillus* spp. (MegaSporeBiotic)”

“…treatment with MegaSporeBiotic a mixture of spores of five *Bacillus* spp. for medium-term (34 days) (G2)…”

“… our results demonstrate that *Bacillus* spp. spore-based probiotics have the capacity to reduce gut dysbiosis to a similar degree as antibiotic treatment.”

“*Bacillus* spp. are of particular interest to humans due to their tolerance of and ability to survive in environments of gastric acidity or the hostile environment of the intestine.”

“…*Bacillus* spp. have a high biotherapeutic potential for production of antimicrobial peptides, production of additional vitamins (e.g., cobalamin, riboflavin) and for modulating the host microbiota …”

Catinean, Adrian, et al. "Bacillus spp. spores—a promising treatment option for patients with irritable bowel syndrome." *Nutrients* 11.9 (2019): 1968.

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C44&q=MegaSporeBiotic+&btnG=

“Bacillus clausii as a treatment of small intestinal bacterial overgrowth” Gabrielli, Maurizio et al. “Bacillus clausii as a treatment of small intestinal bacterial overgrowth.” *The American journal of gastroenterology* vol. 104,5 (2009): 1327-8. doi:10.1038/ajg.2009.91

Methane Dominant SIBO: Bifidobacterium lactose HN019

“Of particular interest were the changes in constipation, irregular bowel movements, and flatulence since symptoms were reported with the highest frequency at baseline. For each of these symptoms, the relative decrease in symptom frequency was approximately two-fold greater in the *B. lactis* HNO 19 groups compared to placebo.**”**

“The beneficial effect of daily *B. lactis* HN019 on WGTT is at least equivalent to that of dietary fiber.”

“Subjects in the present study suffered from functional gastrointestinal symptoms with constipation, irregular bowel movements, and flatulence as the predominant symptoms. The outcomes of this study suggest that *B. lactis* HN019 supplementation reduces the frequency of many common upper and lower gastrointestinal symptoms.”

Waller, Philip A et al. “Dose-response effect of Bifidobacterium lactis HN019 on whole gut transit time and functional gastrointestinal symptoms in adults.” *Scandinavian journal of gastroenterology* vol. 46,9 (2011): 1057-64. doi:10.3109/00365521.2011.584895

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3171707/

Lactobacillus Plantarum (Methane Dominant SIBO)

“The addition of the cell-free supernatant of Lactobacillus plantarum 80 (LP80) to ruminal samples during short-term batch experiments (24 h) led to significant increases in volatile fatty acid (VFA) production (5–30%) and to significant decreases in CH4 production (5–15%), accompanied by H2 accumulation.”

Nollet, Lode, et al. "Effect of the addition of Peptostreptococcus productus ATCC 35244 on reductive acetogenesis in the ruminal ecosystem after inhibition of methanogenesis by cell-free supernatant of Lactobacillus plantarum 80." *Animal Feed Science and Technology* 71.1-2 (1998): 49-66.

https://www.sciencedirect.com/science/article/abs/pii/S0377840197001351

“This study investigated the suppression of in vitro rumen methane (CH4) output by the supernatant of Lactobacillus plantarum…”

O'Brien, M., et al. "The impact of Lactobacillus plantarum TUA1490L supernatant on in vitro rumen methanogenesis and fermentation." *Anaerobe* 22 (2013): 137-140.

https://www.sciencedirect.com/science/article/abs/pii/S1075996413000930

Saccharomyces boulardii (Hydrogen Dominant SIBO)

“The SB (Saccharomyces boulardii) and M (metronidazole antibiotic) + SB groups had decreased diarrhea, abdominal pain, and gas/bloating/flatulence, but M remained unchanged. Reductions in expired hydrogen at 45 to 60 min were as follows: M + SB 48% and 44%, M 18% and 20%, and SB 53% and 60% at the first and second months, respectively ($p < 0.01$).

García-Collinot, Grettel et al. “Effectiveness of Saccharomyces boulardii and Metronidazole for Small Intestinal Bacterial Overgrowth in Systemic Sclerosis.” *Digestive diseases and sciences* vol. 65,4 (2020): 1134-1143. doi:10.1007/s10620-019-05830-0

https://pubmed.ncbi.nlm.nih.gov/31549334/

“The non-pathogenic yeast *Saccharomyces boulardii* CNCM I-745 has demonstrated its effectiveness as a probiotic in the prevention and treatment of antibiotic-associated, infectious and functional diarrhea.”

“The well-studied probiotic yeast *S. boulardii* plays a crucial role in the preservation and/or restoration of intestinal barrier function in multiple disorders.”

Terciolo, Chloe, Michel Dapoigny, and Frederic Andre. "Beneficial effects of Saccharomyces boulardii CNCM I-745 on clinical disorders associated with intestinal barrier disruption." *Clinical and experimental gastroenterology* 12 (2019): 67.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6375115/

Everard, Amandine, et al. "Saccharomyces boulardii administration changes gut microbiota and reduces hepatic steatosis, low-grade inflammation, and fat mass in obese and type 2 diabetic db/db mice." MBio 5.3 (2014): e01011-14

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C10&q=Everard%2C+Amandine%2C+et+al.+%22Saccharomyces+boulardii+administration+changes+gut+microbiota+and+reduces+hepatic+steatosis%2C+low-grade+inflammation%2C+and+fat+mass+in+obese+and+type+2+diabetic+db%2Fdb+mice.%22+MBio+5.3+%282014%29%3A+e01011-14&btnG=

Pontier-Bres, Rodolphe, et al. "The Saccharomyces boulardii CNCM I-745 strain shows protective effects against the B. anthracis LT toxin." *Toxins* 7.11 (2015): 4455-4467.

https://www.mdpi.com/2072-6651/7/11/4455

Bifidobacterium

Bifidobacterium are the bacteria of youth! Healthy babies have lots of this strain!

Lau, Amy Sie-Yik, Jin-Zhong Xiao, and Min-Tze Liong. "Bifidobacterium for infants: essence and efficacy." *Beneficial Microorganisms in Medical and Health Applications*. Springer, Cham, 2015. 39-72.

Bifidobacterium lactis HN019
(Prevalent in infants)

Prasad, Jaya, et al. "Detection of viable Bifidobacterium lactis HN019 (DR10™) in stools of children during a synbiotic dietary intervention trial." *International Dairy Journal* 30.2 (2013): 64-67.

https://www.sciencedirect.com/science/article/abs/pii/S095869461200266X

Bifidobacterium lactis HN019

May help boost gut transit time and relieve constipation:

The study “Dose-response effect of Bifidobacterium lactis HN019 on whole gut transit time and functional gastrointestinal symptoms in adults” published in the journal ‘*Scandinavian journal of gastroenterology*’ states:

“To assess the impact of Bifidobacterium lactis HN019 supplementation on whole gut transit time (WGTT) and frequency of functional gastrointestinal (GI) symptoms in adults.”
“Decreases in mean WGTT over the 14-day study period were statistically significant in the high dose group (49±30 to 21±32 h, p< 0.001) and the low dose group (60±33 to 41±39 h, p= 0.01), but not in the placebo group (43±31 to 44±33 h).”
“Daily B. lactis HN019 supplementation is well tolerated, decreases WGTT in a dose-dependent manner, and reduces the frequency of functional GI symptoms in adults.”

Waller, Philip A., et al. "Dose-response effect of Bifidobacterium lactis HN019 on whole gut transit time and functional gastrointestinal symptoms in adults." *Scandinavian journal of gastroenterology* 46.9 (2011): 1057-1064.

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C10&q=Waller+PA%2C+Gopal+PK%2C+Leyer+GJ%2C+et+al.+Dose-response+effect+of+Bifidobacterium+lactis+HN019%E2%84%A2+on+whole+gut+transit+time+and+functional+gastrointestinal+symptoms+in+adults.+Scandinavian+J+Gastroenterology.+2011%3B46%3A1057-1064&btnG=#d=gs_qabs&t=1672821154412&u=%23p%3DmuudFp0cN4oJ

Ibarra, Alvin, et al. "Effects of 28-day Bifidobacterium animalis subsp. lactis HN019 supplementation on colonic transit time and gastrointestinal symptoms in adults with functional constipation: a double-blind, randomized, placebo-controlled, and dose-ranging trial." *Gut Microbes* 9.3 (2018): 236-251.

https://www.tandfonline.com/doi/full/10.1080/19490976.2017.1412908

Bifidobacterium lactis HN019

May help boost cellular immune activity in healthy elderly subjects.

“Miller, Larry E., Liisa Lehtoranta, and Markus J. Lehtinen. "The effect of Bifidobacterium animalis ssp. lactis HN019 on cellular immune function in healthy elderly subjects: systematic review and meta-analysis." *Nutrients* 9.3 (2017): 191.”

https://www.mdpi.com/2072-6643/9/3/191

“The results demonstrate that dietary consumption of B. lactis HN019 can enhance natural immunity in healthy elderly subjects,”

Arunachalam, K., H. S. Gill, and R. K. Chandra. "Enhancement of natural immune function by dietary consumption of Bifidobacterium lactis (HN019)." *European Journal of Clinical Nutrition* 54.3 (2000): 263-267.

https://www.nature.com/articles/1600938

Grimm, Verena, Christina Westermann, and Christian U. Riedel. "Bifidobacteria-host interactions—an update on colonisation factors." BioMed Research International 2014 (2014).

Martinez, Fabio Andres Castillo, et al. "Bacteriocin production by Bifidobacterium spp. A review." Biotechnology Advances 31.4 (2013): 482-488.

Lau, Amy Sie-Yik, Jin-Zhong Xiao, and Min-Tze Liong. "Bifidobacterium for Infants: Essence and Efficacy." Beneficial Microorganisms in Medical and Health Applications. Springer International Publishing, 2015. 39-72.

Saez-Lara, Maria Jose, et al. "The role of probiotic lactic acid bacteria and bifidobacteria in the prevention and treatment of inflammatory bowel disease and other related diseases: a systematic review of randomized human clinical trials." BioMed Research International 2015 (2015).

Shin, Hea Soon, et al. "Hypocholesterolemic effect of sonication-killed Bifidobacterium longum isolated from healthy adult Koreans in high cholesterol fed rats." Archives of Pharmacal Research 33.9 (2010): 1425-1431.

Childs, C. E., et al. "Bifidobacterium longum bv. infantis CCUG 52486 combined with gluco-oligosaccharide significantly reduces the duration of self-reported cold and flu-like symptoms among healthy older adults after seasonal influenza vaccination." Proceedings of the Nutrition Society 72.OCE1 (2013): E10.

Bercik, P., et al. "The anxiolytic effect of Bifidobacterium longum NCC3001 involves vagal pathways for gut–brain communication." Neurogastroenterology & Motility 23.12 (2011): 1132-1139.

Spaiser, Samuel J., et al. "Lactobacillus gasseri KS-13, Bifidobacterium bifidum G9-1, and Bifidobacterium longum MM-2 Ingestion Induces a Less Inflammatory Cytokine Profile and a Potentially Beneficial Shift in Gut Microbiota in Older Adults: A Randomized, Double-Blind, Placebo-Controlled, Crossover Study." Journal of the American College of Nutrition 34.6 (2015): 459-469.

Guglielmetti, Simone, et al. "Randomised clinical trial: Bifidobacterium bifidum MIMBb75 significantly alleviates irritable bowel syndrome and improves quality of life—a double-blind, placebo-controlled study." Alimentary Pharmacology & Therapeutics 33.10 (2011): 1123-1132.

Kim, Ji Yeun, et al. "Effect of probiotic mix (Bifidobacterium bifidum, Bifidobacterium lactis, Lactobacillus acidophilus) in the primary prevention of eczema: a double-blind, randomized, placebo-controlled trial." Pediatric Allergy and Immunology 21.2p2 (2010): e386-e393.

Bartosch, Sabine, et al. "Microbiological effects of consuming a synbiotic containing Bifidobacterium bifidum, Bifidobacterium lactis, and oligofructose in elderly persons, determined by real-time polymerase chain reaction and counting of viable bacteria." Clinical Infectious Diseases 40.1 (2005): 28-37.

Tabbers, M. M., et al. "Is Bifidobacterium breve effective in the treatment of childhood constipation? Results from a pilot study." Nutrition Journal 10.1 (2011):

Kondo, Shizuki, et al. "Antiobesity effects of Bifidobacterium breve strain B-3 supplementation in a mouse model with high-fat diet-induced obesity." Bioscience, Biotechnology, and Biochemistry 74.8 (2010): 1656-1661.

Mortaz, Esmaeil, et al. "Anti-Inflammatory Effects of Lactobacillus Rahmnosus and Bifidobacterium Breve on Cigarette Smoke Activated Human Macrophages." PloS One 10.8 (2015): e0136455.

Groeger, David, et al. "Bifidobacterium infantis 35624 modulates host inflammatory processes beyond the gut." Gut Microbes 4.4 (2013): 325-339.

Smecuol, Edgardo, et al. "Exploratory, randomized, double-blind, placebo-controlled study on the effects of Bifidobacterium infantis natren life start strain super strain in active celiac disease." Journal of Clinical Gastroenterology 47.2 (2013): 139-147

In the article "A mixture of 3 bifidobacteria decreases abdominal pain and improves the quality of life in children with irritable bowel syndrome" in the '*Journal of Clinical Gastroenterology'* it states:

"In children with IBS a mixture of *Bifidobacterium infantis M-63*, *breve M-16V*, and *longum BB536* is associated with improvement in AP (Abdominal Pain) and QoL (Quality of Life)."

Giannetti, Eleonora, et al. "A mixture of 3 bifidobacteria decreases abdominal pain and improves the quality of life in children with irritable bowel syndrome." *Journal of Clinical Gastroenterology* 51.1 (2017): e5-e10.

https://www.ingentaconnect.com/content/wk/jcga/2017/00000051/00000001/art00005

Probiotic Pro Bb536

May relieve abdominal pain

In the article **“**"Effect of Bifidobacterium Longum Bb536 plus lactoferrin in the treatment of irritable bowel Syndrome. A double blind clinical trial” published in 2017 in the journal *‘Advanced Research in Gastroenterology & Hepatology’,* it states:

“Presence of Bifidobacteria in patients with Irritable Bowel Syndrome (IBS) is decreased and their use as probiotics has been indicated to re-establish eubiosis in this condition. Bifidobacterium Longum BB-536 (BB-536) has favorable direct effect on epithelial adherence, reinforcement of tight junctions, stimulation of IgA production and of cell-mediated immunity, anti gram-negative and pathogenic microbe action. Lactoferrin acts as prebiotic for bifidobacteria (bifidogenic effect) and has antinflammatory, antioxidant, antibacterial, and antiviral activity.”

Biviano, Ivano, et al. "Effect of Bifidobacterium Longum Bb536 plus lactoferrin in the treatment of irritable bowel Syndrome. A double blind clinical trial." *Advanced Research in Gastroenterology & Hepatology* 6.4 (2017): 1-4.

https://pdfs.semanticscholar.org/d0b9/a6aabbb1f8bd3ecce41383e0a82a54f870f7.pdf

In the article “"Effects of Bifidobacterium longum BB536 and Lactobacillus rhamnosus HN001 in IBS patients” in the journal *‘European Journal of Clinical Investigation’* states:

“The novel formulation of *B. longum* BB536 and *L. rhamnosus* HN001 with B6 vitamin improves symptoms and severity of disease, restores intestinal permeability and gut microbiota in IBS patients.”

Bonfrate, Leonilde, et al. "Effects of Bifidobacterium longum BB536 and Lactobacillus rhamnosus HN001 in IBS patients." *European Journal of Clinical Investigation* 50.3 (2020): e13201.

https://onlinelibrary.wiley.com/doi/abs/10.1111/eci.13201

Lactobacillus rhamnosus (L. rhamnosus)

e article “Bacillus spp. spores—a promising treatment option for patients with irritable bowel syndrome” in the journal’*Nutrients’, it states:*

“In this study we compared the effects of treatment with a spore-based probiotic mixture of five *Bacillus* spp. (MegaSporeBiotic)”

“…treatment with MegaSporeBiotic a mixture of spores of five *Bacillus* spp. for medium-term (34 days) (G2)…”

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“*Bacillus* spp. are of particular interest to humans due to their tolerance of and ability to survive in environments of gastric acidity or the hostile environment of the intestine.”

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Methane Dominant SIBO: Bifidobacterium lactose HN019

“Of particular interest were the changes in constipation, irregular bowel movements, and flatulence since symptoms were reported with the highest frequency at baseline. For each of these symptoms, the relative decrease in symptom frequency was approximately two-fold greater in the *B. lactis* HNO 19 groups compared to placebo.**”**

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“The addition of the cell-free supernatant of Lactobacillus plantarum 80 (LP80) to ruminal samples during short-term batch experiments (24 h) led to significant increases in volatile fatty acid (VFA) production (5–30%) and to significant decreases in CH4 production (5–15%), accompanied by H2 accumulation.”

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https://www.sciencedirect.com/science/article/abs/pii/S0377840197001351

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https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6375115/

Everard, Amandine, et al. "Saccharomyces boulardii administration changes gut microbiota and reduces hepatic steatosis, low-grade inflammation, and fat mass in obese and type 2 diabetic db/db mice." MBio 5.3 (2014): e01011-14

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Pontier-Bres, Rodolphe, et al. "The Saccharomyces boulardii CNCM I-745 strain shows protective effects against the B. anthracis LT toxin." *Toxins* 7.11 (2015): 4455-4467.

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Bifidobacterium

Bifidobacterium are the bacteria of youth! Healthy babies have lots of this strain!

Lau, Amy Sie-Yik, Jin-Zhong Xiao, and Min-Tze Liong. "Bifidobacterium for infants: essence and efficacy." *Beneficial Microorganisms in Medical and Health Applications*. Springer, Cham, 2015. 39-72.

Bifidobacterium lactis HN019
(Prevalent in infants)

Prasad, Jaya, et al. "Detection of viable Bifidobacterium lactis HN019 (DR10™) in stools of children during a synbiotic dietary intervention trial." *International Dairy Journal* 30.2 (2013): 64-67.

https://www.sciencedirect.com/science/article/abs/pii/S095869461200266X

Bifidobacterium lactis HN019

May help boost gut transit time and relieve constipation:

The study “Dose-response effect of Bifidobacterium lactis HN019 on whole gut transit time and functional gastrointestinal symptoms in adults” published in the journal ‘*Scandinavian journal of gastroenterology*’ states:

“To assess the impact of Bifidobacterium lactis HN019 supplementation on whole gut transit time (WGTT) and frequency of functional gastrointestinal (GI) symptoms in adults.”
“Decreases in mean WGTT over the 14-day study period were statistically significant in the high dose group (49±30 to 21±32 h, $p < 0.001$) and the low dose group (60±33 to 41±39 h, $p = 0.01$), but not in the placebo group (43±31 to 44±33 h).”
“Daily B. lactis HN019 supplementation is well tolerated, decreases WGTT in a dose-dependent manner, and reduces the frequency of functional GI symptoms in adults.”

Waller, Philip A., et al. "Dose-response effect of Bifidobacterium lactis HN019 on whole gut transit time and functional gastrointestinal symptoms in adults." *Scandinavian journal of gastroenterology* 46.9 (2011): 1057-1064.

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Ibarra, Alvin, et al. "Effects of 28-day Bifidobacterium animalis subsp. lactis HN019 supplementation on colonic transit time and gastrointestinal symptoms in adults with functional constipation: a double-blind, randomized, placebo-controlled, and dose-ranging trial." *Gut Microbes* 9.3 (2018): 236-251.

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Bifidobacterium lactis HN019
May help boost cellular immune activity in healthy elderly subjects.

“Miller, Larry E., Liisa Lehtoranta, and Markus J. Lehtinen. "The effect of Bifidobacterium animalis ssp. lactis HN019 on cellular immune function in

healthy elderly subjects: systematic review and meta-analysis." *Nutrients* 9.3 (2017): 191."

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"The results demonstrate that dietary consumption of B. lactis HN019 can enhance natural immunity in healthy elderly subjects,"

Arunachalam, K., H. S. Gill, and R. K. Chandra. "Enhancement of natural immune function by dietary consumption of Bifidobacterium lactis (HN019)." *European Journal of Clinical Nutrition* 54.3 (2000): 263-267.

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Grimm, Verena, Christina Westermann, and Christian U. Riedel. "Bifidobacteria-host interactions—an update on colonisation factors." BioMed Research International 2014 (2014).

Martinez, Fabio Andres Castillo, et al. "Bacteriocin production by Bifidobacterium spp. A review." Biotechnology Advances 31.4 (2013): 482-488.

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Saez-Lara, Maria Jose, et al. "The role of probiotic lactic acid bacteria and bifidobacteria in the prevention and treatment of inflammatory bowel disease and other related diseases: a systematic review of randomized human clinical trials." BioMed Research International 2015 (2015).

Shin, Hea Soon, et al. "Hypocholesterolemic effect of sonication-killed Bifidobacterium longum isolated from healthy adult Koreans in high cholesterol fed rats." Archives of Pharmacal Research 33.9 (2010): 1425-1431.

Childs, C. E., et al. "Bifidobacterium longum bv. infantis CCUG 52486 combined with gluco-oligosaccharide significantly reduces the duration of self-reported

cold and flu-like symptoms among healthy older adults after seasonal influenza vaccination." Proceedings of the Nutrition Society 72.OCE1 (2013): E10.

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Spaiser, Samuel J., et al. "Lactobacillus gasseri KS-13, Bifidobacterium bifidum G9-1, and Bifidobacterium longum MM-2 Ingestion Induces a Less Inflammatory Cytokine Profile and a Potentially Beneficial Shift in Gut Microbiota in Older Adults: A Randomized, Double-Blind, Placebo-Controlled, Crossover Study." Journal of the American College of Nutrition 34.6 (2015): 459-469.

Guglielmetti, Simone, et al. "Randomised clinical trial: Bifidobacterium bifidum MIMBb75 significantly alleviates irritable bowel syndrome and improves quality of life—a double-blind, placebo-controlled study." Alimentary Pharmacology & Therapeutics 33.10 (2011): 1123-1132.

Kim, Ji Yeun, et al. "Effect of probiotic mix (Bifidobacterium bifidum, Bifidobacterium lactis, Lactobacillus acidophilus) in the primary prevention of eczema: a double-blind, randomized, placebo-controlled trial." Pediatric Allergy and Immunology 21.2p2 (2010): e386-e393.

Bartosch, Sabine, et al. "Microbiological effects of consuming a synbiotic containing Bifidobacterium bifidum, Bifidobacterium lactis, and oligofructose in elderly persons, determined by real-time polymerase chain reaction and counting of viable bacteria." Clinical Infectious Diseases 40.1 (2005): 28-37.

Tabbers, M. M., et al. "Is Bifidobacterium breve effective in the treatment of childhood constipation? Results from a pilot study." Nutrition Journal 10.1 (2011):

Kondo, Shizuki, et al. "Antiobesity effects of Bifidobacterium breve strain B-3 supplementation in a mouse model with high-fat diet-induced obesity." Bioscience, Biotechnology, and Biochemistry 74.8 (2010): 1656-1661.

Mortaz, Esmaeil, et al. "Anti-Inflammatory Effects of Lactobacillus Rahmnosus and Bifidobacterium Breve on Cigarette Smoke Activated Human Macrophages." PloS One 10.8 (2015): e0136455.

Groeger, David, et al. "Bifidobacterium infantis 35624 modulates host inflammatory processes beyond the gut." Gut Microbes 4.4 (2013): 325-339.

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In the article "A mixture of 3 bifidobacteria decreases abdominal pain and improves the quality of life in children with irritable bowel syndrome" in the '*Journal of Clinical Gastroenterology'* it states:

"In children with IBS a mixture of *Bifidobacterium infantis M-63*, *breve M-16V*, and *longum BB536* is associated with improvement in AP (Abdominal Pain) and QoL (Quality of Life)."

Giannetti, Eleonora, et al. "A mixture of 3 bifidobacteria decreases abdominal pain and improves the quality of life in children with irritable bowel syndrome." *Journal of Clinical Gastroenterology* 51.1 (2017): e5-e10.

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Probiotic Pro Bb536

May relieve abdominal pain

In the article **"**"Effect of Bifidobacterium Longum Bb536 plus lactoferrin in the treatment of irritable bowel Syndrome. A double blind clinical trial" published in 2017 in the journal *'Advanced Research in Gastroenterology & Hepatology',* it states:

“Presence of Bifidobacteria in patients with Irritable Bowel Syndrome (IBS) is decreased and their use as probiotics has been indicated to re-establish eubiosis in this condition. Bifidobacterium Longum BB-536 (BB-536) has favorable direct effect on epithelial adherence, reinforcement of tight junctions, stimulation of IgA production and of cell-mediated immunity, anti gram-negative and pathogenic microbe action. Lactoferrin acts as prebiotic for bifidobacteria (bifidogenic effect) and has antinflammatory, antioxidant, antibacterial, and antiviral activity.”

Biviano, Ivano, et al. "Effect of Bifidobacterium Longum Bb536 plus lactoferrin in the treatment of irritable bowel Syndrome. A double blind clinical trial." *Advanced Research in Gastroenterology & Hepatology* 6.4 (2017): 1-4.

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In the article “"Effects of Bifidobacterium longum BB536 and Lactobacillus rhamnosus HN001 in IBS patients” in the journal *‘European Journal of Clinical Investigation’* states:

“The novel formulation of *B. longum* BB536 and *L. rhamnosus* HN001 with B6 vitamin improves symptoms and severity of disease, restores intestinal permeability and gut microbiota in IBS patients.”

Bonfrate, Leonilde, et al. "Effects of Bifidobacterium longum BB536 and Lactobacillus rhamnosus HN001 in IBS patients." *European Journal of Clinical Investigation* 50.3 (2020): e13201.

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Lactobacillus rhamnosus (L. rhamnosus)

Prebiotics:

At the end of the program, we recommend you introduce PHGG Partially Hydrolyzed Guar Gum. (Safe those recovering from SIBO)

Ohashi Y, Sumitani K, Tokunaga M, Ishihara N, Okubo T, Fujisawa T. Consumption of partially hydrolysed guar gum stimulates Bifidobacteria and butyrate-producing bacteria in the human large intestine. Benef Microbes. 2015;6(4):451-5. doi: 10.3920/BM2014.0118. Epub 2015 Feb 12. PMID: 25519526.

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Niv, E et al. “Randomized clinical study: Partially hydrolyzed guar gum (PHGG) versus placebo in the treatment of patients with irritable bowel syndrome.” *Nutrition & metabolism* vol. 13 10. 6 Feb. 2016, doi:10.1186/s12986-016-0070-5

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Fiber:

Need for a healthy Microbiome

“Dietary fibers are largely metabolized by gut bacteria.”
“Soluble fibers can be further processed by bacteria into SCFAs as metabolites [52] although some of them are not fermentable including psyllium and gums. Different types of bacteria produce different types of SCFAs [53,54,55,56,57].”

“The most abundant SCFAs in the human colon are acetate, propionate, and butyrate …”

Usuda, Haruki, Takayuki Okamoto, and Koichiro Wada. "Leaky gut: Effect of dietary fiber and fats on microbiome and intestinal barrier." *International Journal of Molecular Sciences* 22.14 (2021): 7613.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8305009/

As Naomi Whittle explains in her book “High Fiber Keto”:

“Fiber is needed for certain beneficial bacteria to produce byuterate (a short chain fatty acid) that helps lower inflammation, keep your heart healthy, keep insulin levels balanced, regulates appetite, and supports your body’s mitochondrial health.

“Butyrate is a well-documented beneficial factor for maintaining colonocyte health by providing energy to intestinal epithelial cells, which likely contributes to intestinal epithelial integrity [64]. Butyrate suppresses cytokine-induced barrier dysfunction by modifying claudin-2 levels in vitro [65].”

Usuda, Haruki, Takayuki Okamoto, and Koichiro Wada. "Leaky gut: Effect of dietary fiber and fats on microbiome and intestinal barrier." *International Journal of Molecular Sciences* 22.14 (2021): 7613.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8305009/

Soluble (psyllium, flax, avocados,
Insoluble (flax, greens, avocados,

“In total, seven studies analyzed the association between fiber supplementation and the impact on the gut microbiome [**20**,**50**,**51**,**52**,**53**,**54**,**55**]. **Table 4** provides detailed information about the characteristics of the included studies. Dietary supplementation with soluble fiber was related to positive changes in the bacterial composition of the gut microbiota [**20**,**52**,**54**,**55**]. The implementation of psyllium for 7 days in constipated subjects resulted in significant increases in beneficial microorganisms, such as *Faecalibacterium*, *Lachnospira* and *Roseburia*. These are connected with producing SCFAs such as butyrate and increased fecal water absorption [**20**]. Holscher et al. [**54**] demonstrated that adding agave inulin to healthy adult diets improved gut microbiota diversity,

including a reduction in *Desulfovibrio* and an increase in *Actinobacteria* and *Bifidobacteria*."

"In another randomized control trial, the combination of partially hydrolyzed guar gum (PHGG) and inulin for 3 weeks significantly decreased Clostridium sp. [**55**]. Moreover, four authors observed that adding psyllium husk or PHGG to a regular diet may improve IBS symptoms, such as abdominal pain, bloating or gasses, as well as improve stool consistency and frequency [**20**,**51**,**52**,**53**]. Switching from a high-fiber diet to a low-fiber diet (<11 g/1000 cal) in 16 healthy volunteers for 7 days was associated with the development of GI symptoms in every participant of the study. Moreover, SIBO was diagnosed in two subjects after this short-term intervention with a low-fiber diet [**50**].
Similar results were found with other authors [**56**,**57**]. Garg [**57**] concluded that the intake of 25 g of psyllium husk with 500 mL of water for 12 weeks resulted in a major relief of IBS symptoms. However, Oskouie et al. [**56**] presented that IBS was more prevalent in individuals with a low intake of dietary fiber.
Dietary fiber should be considered an essential nutrient for the growth of beneficial microorganisms with prebiotic potential. The included studies support that increasing the intake of fiber, in particular, soluble fiber, may yield satisfactory results in patients with GI symptoms and modulate gut microbiota;…"

Wielgosz-Grochowska, Justyna Paulina, Nicole Domanski, and Małgorzata Ewa Drywień. "Efficacy of an Irritable Bowel Syndrome Diet in the Treatment of Small Intestinal Bacterial Overgrowth: A Narrative Review." *Nutrients* 14.16 (2022): 3382.

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Extra Sources:

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https://shop.bodyecology.com/products/bifidus-power-blend-powder-probiotic?_pos=1&_sid=2d988f1cf&_ss=r

https://chriskresser.com/how-the-gut-microbiome-influences-everything-about-your-health/

https://chriskresser.com/how-to-cure-gerd-without-medication/

https://chriskresser.com/what-everybody-ought-to-know-but-doesnt-about-heartburn-gerd/

https://chriskresser.com/get-rid-of-heartburn-and-gerd-forever-in-three-simple-steps/

https://draxe.com/nutrition/wormwood/

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