



DOI 10.64437/jin0124024

## CLINICAL EDUCATION FACT SHEET

## Nutritional Strategies for Stress-Related SIBO: A FODMAP Technique

**Jasmine B. Hollywood, DCN, LDN, CNS, CRPS, ORDM***Department of Health Sciences, Everglades University, Tampa, Florida*

## KEYWORDS

SIBO  
paleo  
FODMAP  
nutrition  
diet  
practitioner

Received 12 October 2024 | Revised 12 January 2025 | Accepted 12 January 2025

## ABSTRACT

**Background:** A link exists between psychological stress and gastrointestinal microbiota imbalance that may induce SIBO in individuals with specific mental health disorders, such as PTSD, anxiety, and depression.**Purpose:** The aim was to develop a FODMAP foods list for SIBO that models an ancestral diet approach for utility in nutrition practice.**Results:** A shopping list was developed and sample meals for individuals that present with SIBO.**Conclusion:** Low FODMAPs may reduce SIBO and correlating symptoms in clients.

### Introduction

Current data demonstrates a link between psychological stress and gastrointestinal (GI) microbiota imbalances, specifically connecting dysbiosis to anxiety and depression.<sup>1,2</sup> Chronic activation of the hypothalamus-pituitary-adrenal (HPA) axis from psychological stress negatively affects small intestine transit time, induces small intestinal bacterial overgrowth (SIBO), and significantly disrupt the balance of the intestinal mucosa barrier.<sup>1</sup> This microbiota upset impacts several intestinal functions, such as digestion, mucosal permeability and immunity, motility, visceral-sensing, and energy return.<sup>1</sup>

### What is SIBO?

Signs of SIBO occurs when there is abnormal increases in bacteria, including: *Streptococcus*, *Escherichia coli*, *Lactobacillus* or *Bacteroides* bacteria in the small intestine.<sup>1</sup> This overgrowth leads to bloating, diarrhea, and stomach pain.<sup>1</sup>

### What is Gut Healing?

Gut healing refers to restoring the GI mucosa lining and rebalancing of the microbiota to improve digestive and immune function. This process is vital for managing conditions like SIBO. The goal is to use nutrition and gut-healing herbs to repair the GI mucosa lining and restore normal microbiota balance, absorption of nutrients, and facilitate normal bowel functions.

### The Role of Gut Health in Stress-Related Disorders

Stress has significant impact on GI health which affects the cerebral system. This system is regulated by the

vagus nerve,<sup>2,3</sup> clinicians call the gut-brain axis,<sup>2</sup> a crucial bi-directional communication system that regulates immune function, emotional well-being, and responses to stress.<sup>3</sup> Disruptions in the neuroimmune system are linked to psychiatric disorders, such as post-traumatic stress disorder (PTSD), depression, and anxiety.<sup>4</sup> The gut microbiota influences the production of serotonin<sup>4</sup> and dopamine<sup>2</sup> neurotransmitters impacting behavior. Stress can further impact these processes. Stress-induced physiological changes in gut permeability, often referred to as "leaky gut," can exacerbate GI inflammation contributing to heightened anxiety and depressive symptoms and states.<sup>3</sup> Furthermore, high anxiety-states ( $t = 4.57$ ;  $P < .001$ ), emotional tension ( $t = 5.71$ ;  $P < .001$ ), external stress ( $t = 2.10$ ;  $P < .050$ ), intrapsychic stress ( $t = 5.62$ ;  $P < .001$ ), and total stress ( $t = 5.13$ ;  $P < .001$ ) is very high in individuals with SIBO.<sup>1</sup> Overall, GI inflammation is caused by an imbalance in microbiota and its effect can be found in various CNS disorders

### SIBO and FODMAPs

#### What are FODMAPs?

FODMAPs (fermentable oligosaccharides, disaccharides, monosaccharides, and polyols) are a group of carbohydrates (sugars) that can be hard to digest for some people, leading to digestive problems like gas and bloating.

#### How FODMAPs Help SIBO

Since SIBO happens when there are too many



bacteria in the small intestine, the bacteria feed on FODMAPs when FODMAPs ferment, causing gas and discomfort. Reducing FODMAPs in the diet can help by decreasing the food available for bacteria, which may reduce bloating and pain.

**Who Benefits**

Children<sup>1</sup> and adults<sup>1</sup> with pathological conditions, such as obesity,<sup>1</sup> diabetes,<sup>1</sup> atopy,<sup>1</sup> stress,<sup>1,2,3,4</sup> depression,<sup>1,2,3,4</sup> anxiety,<sup>1,2,3,4</sup> PTSD,<sup>4</sup> irritable bowel syndrome (IBS),<sup>1,2,3</sup> and irritable bowel disease (IBD)<sup>1,3</sup> can benefit from SIBO and FODMAP dietary solutions.

**When to Implement the SIBO-FODMAP Protocol**

A SIBO or FODMAP-restricted diet can be implemented when there is a:

- Diagnosis of SIBO
- Diagnosis of IBS or IBD
- Diagnosis of a comorbid psychiatric disorder such as, stress, anxiety, depression, or PTSD
- Symptomatic presentation, such as individuals exhibiting symptoms like bloating, diarrhea, or unexplained abdominal pain.

**Other Considerations**

For people facing food access challenges, who face homelessness, or addiction issues SIBO and FODMAP management may be difficult due to the lack of controlled food options or self control. Consider the following:

- The practical implementation of nutrition protocols may be limited by the availability of:
  - Specific foods
  - Proper food storage
- Adapting to nutrition protocols significantly depends on their current lifestyle focus:
  - Housing crisis may place the focus on low-cost, easily accessible options and not fresh vegetables or ability to prepare at-home foods.
  - Substance use may result in focus of simplified approaches and easy-access community-based interventions to reduce mental distress.

The goal is to minimize foods that ferment in the gut, which could involve education on local and affordable low FODMAP foods and not always fresh and/or cookable options.

**Intervention**

**Herbs for Gut Healing**

While the clinical evidence for herbs in gut healing is growing, many practitioners use traditional herbal remedies for digestive health, particularly for issues like bloating, dysbiosis, and inflammation. Herbs such as

slippery elm, marshmallow root, and licorice root have been used historically for their mucilaginous properties, helping to soothe the gut lining and reduce inflammation.<sup>5</sup> Turmeric, with its active compound curcumin, has potent anti-inflammatory properties that can benefit both gut and brain health.<sup>6</sup>

**Ancestral Approaches**

Paleo diets, often focused on whole, unprocessed foods, can be beneficial for managing SIBO and stress-related disorders due to their anti-inflammatory effects and support for gut healing. The reduction of

**Table 1. Paleo-Based FODMAP Foods List for SIBO**

Low	Moderate	High	Illegal
<b>Vegetables</b>			
Arugula	Artichoke (globe)	Chives	Potatoes
Asparagus	Beetroot	Garlic	Root Veggies (others)
Baby Spinach	Bok Choy	Leeks	Seaweeds
Bean Sprouts	Cabbage (savoy)	Onions (white)	Taro
Bell Peppers	Carrots	Scallions	Water Chestnuts
Broccoli	Cauliflower	Shallots	Yam
Brussels Sprouts	Chickpeas		
Cabbage (common)	Mushroom (button)		
Celery	Mushroom (others)		
Chicory Leaves	Parsnips		
Chili Pepper	Pumpkin		
Cucumber	Snow Peas		
Dandelion Greens	Spaghetti Squash		
Endive	Yellow Summer Squash		
Fennel Leaves			
Green Beans			
Greens			
Okra			
Radicchio			
Tomato			
Turnip			
Zucchini			
<b>Fruits</b>			
Lemon Juice	Avocado (-)	Avocado (++)	Apple
Boysenberries		Peaches	Pear
Blueberries		Nectarines	
Cantaloupe		Cherries	
Honey Dew Melon		Apricots	
Pineapple		Plums	
Raspberries		Mango	
Strawberries			
Citrus			
<b>Nuts and Seeds</b>			
Nuts (1 tbsp)	Nuts (- tbsp)	Nuts (2++ tbsp)	Everything else
Seeds (1 tbsp)	Seeds (- tbsp)	Seeds (2++ tbsp)	
<b>Legumes</b>			
Lentils (canned)	Butter Beans	Lima Beans	Everything els
Firm tofu/soy beans	Green Lentils	Red Kidney Beans	
Tempeh	Red Lentils	Split Peas	
<b>Grains</b>			
Quinoa	Corn	Wheat	Everything else
Rice		Rye	
Oats			
Cornmeal			
Polenta			
Buckwheat			
Millet			
Sorghum			
Teff			
<b>Abbreviations:</b>			
-, less			
++, more			



ultra-processed carbohydrates, sugars, and hydrogenated oils aligns with reducing dysbiosis and improving GI mucosa integrity. High-quality protein sources, healthy fats, and fiber-rich vegetables promote GI motility and functions.

### Specific Carbohydrates

The reason certain foods are classified as high or low in FODMAPS is due to their specific types and quantities of fermentable sugars.

The *allium* family is a monocotyledonous genus that has been assigned to the *Amaryllidaceae*, *Liliaceae*, and the *Alliaceae*. The most famous of the species being the onion, garlic, and lily leek. These are considered higher on the FODMAPS chart due to their high content of long-chain fructans, a type of oligosaccharide and sometimes higher levels of galacto-oligosaccharides. Fructans are fructose molecules. Leafy greens and low-carbohydrate containing vegetables are mostly composed of water, fiber, and fewer fermentable sugars. Likewise, apples, pears, and stone fruits are higher in fructose and sorbitol (a polyol), which can draw water into the intestines. Other fruits, although containing fructose, are lower in fructose levels and have a reduced effect.

**Table 2.** Example Paleo Dinners for Easy Implementation

Poultry	Seafood	Meat
<ul style="list-style-type: none"> <li>Cucumber and baby bells</li> <li>Quinoa and swiss chard</li> <li>Zucchini and cherry tomatoes</li> <li>Spaghetti squash</li> <li>Baby spinach</li> <li>Bell peppers and parsley</li> <li>Butternut squash and cinnamon</li> <li>Oyster mushrooms</li> <li>Green beans</li> <li>Sweet potato</li> </ul>	<ul style="list-style-type: none"> <li>Broccoli</li> <li>Celery and seaweed</li> <li>Cauliflower</li> <li>Snap peas</li> <li>Tomatoes and bok choy</li> <li>Asparagus and cashews</li> <li>Yellow summer squash</li> <li>Rice</li> </ul>	<ul style="list-style-type: none"> <li>Green peas and carrots</li> <li>Chickpeas</li> <li>Beetroot and thyme</li> <li>Broccolini and celery</li> <li>Lentils</li> <li>Red beans and rice</li> <li>Mushrooms</li> <li>Potatoes</li> <li>Collards and hot peppers</li> <li>Carrots</li> </ul>

## Nutrition Protocol in Practice

### Phase 1

- Eliminate Illegal and high-FODMAP Foods.

### Phase 2

- Gradual reduction of moderate-FODMAP foods.
- Consider adding herbs.

### Phase 3

- Gradual reintroduction of moderate-FODMAP foods after 4-6 weeks.

## Utility for Practitioners

By understanding the link between gut health and mental health, particularly in the context of stress-

related disorders such as PTSD, practitioners can incorporate the SIBO dietary interventions as part of their treatment strategies. Utility of ancestral diets, herbal remedies, and modern understanding of the gut-brain axis provides a holistic framework for improving client outcomes.

- Practitioners can use the table and other handouts as part of their client consultations.
- The table on SIBO can help practitioners create personalized meal plans, while the herbs offers an alternative approach to gut health.
- Include personalized dietary advice.

### References:

- Kossewska J, Bierlit K, Trajkovski V. Personality, Anxiety, and Stress in Patients with Small Intestine Bacterial Overgrowth Syndrome. The Polish Preliminary Study. *Int J Environ Res Public Health*. 2022;20(1):93. Published 2022 Dec 21. doi:10.3390/ijerph20010093
- Cryan JF, Dinan TG. Mind-altering microorganisms: the impact of the gut microbiota on brain and behaviour. *Nat Rev Neurosci*. 2012;13(10):701-712. doi:10.1038/nrn3346
- Mayer EA. Gut feelings: the emerging biology of gut-brain communication. *Nat Rev Neurosci*. 2011;12(8):453-466. Published 2011 Jul 13. doi:10.1038/nrn3071
- Tucker P, Ruwe WD, Masters B, et al. Neuroimmune and cortisol changes in selective serotonin reuptake inhibitor and placebo treatment of chronic posttraumatic stress disorder. *Biol Psychiatry*. 2004;56(2):121-128. doi:10.1016/j.biopsych.2004.03.009
- Langmead L, Rampton DS. Review article: herbal treatment in gastrointestinal and liver disease--benefits and dangers. *Aliment Pharmacol Ther*. 2001;15(9):1239-1252. doi:10.1046/j.1365-2036.2001.01053.x
- Hewlings SJ, Kalman DS. Curcumin: A Review of Its Effects on Human Health. *Foods*. 2017;6(10):92. Published 2017 Oct 22. doi:10.3390/foods6100092

### Handling Editor

Moon Twayana, PhD Biochemistry & Molecular Biology

### Reviewers

Deborah Sobel DCN, LDN, CNS, NBC-HWC

