



Mucosal Health & Food Tolerance

NUTRITIONAL, DIETARY, & LIFESTYLE GUIDE

6-Step Guide for Mucosal Health & Food Tolerance Support

Food intolerance is the result of the immune system's reaction to certain foods. Many factors can result in an immune reaction to food, including an inability to break down food properly, an unhealthy microbial environment, and a weakened GI mucous membrane. These reactions can be caused by stress factors, environmental triggers, and more. The key areas to support food tolerance include the following:

1. A Dietary Plan

Use a food plan to support mucosal health and food tolerance and identify and remove reactive foods.

2. Digestive Enzymes

Support the body's ability to help break down proteins, fats, and carbohydrates.

3. Healthy Microbial Environment

Support a healthy and diverse intestinal bacterial environment.

4. Mucosal Support

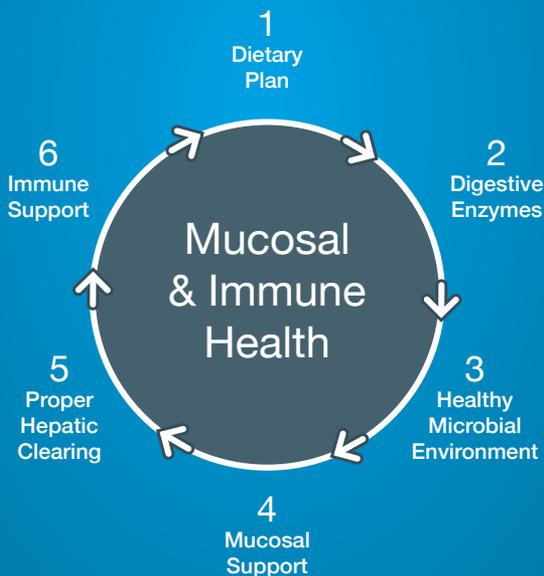
Support the intestines' ability to help maintain a healthy mucosal layer.

5. Proper Hepatic Clearing

Support healthy phase I, II, & III detoxification.

6. Immune Support

Support healthy immune regulatory function and immune tolerance.



Understanding Food Tolerance



The gastrointestinal (GI) tract is the region of our body that directly interacts with the external world through the foods we eat. Our GI tract performs two main functions.

First, it allows us to absorb nutrients critical to maintaining our health. Second, its protective immune system shields us from pathogens, such as bacteria and foreign invaders. The area of our GI tract—from the esophagus to the rectum—where we absorb nutrients and have our protective immune system consists of a specialized line of cells, called the “mucosal layer.”

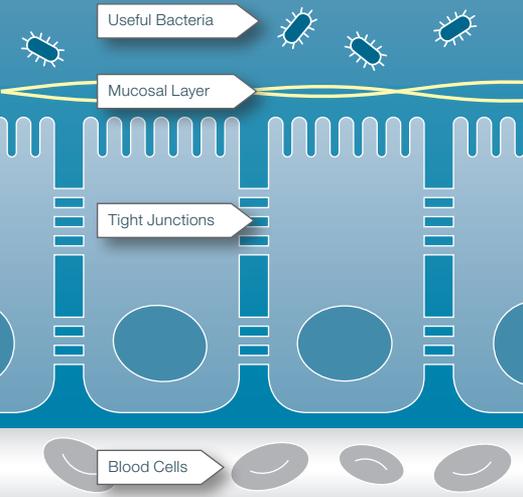
Identifying and removing reactive foods can be a good first-step strategy that may impact energy levels, skin appearance, digestive comfort, well-being, mood, and more. When multiple food reactions are identified, your healthcare professional may recommend removing those foods from the diet. Taking steps to support the GI mucosa and immune system and address any environmental concerns, as recommended by your healthcare professional, may also be beneficial.

The mucosal layer is the first protective barrier in the intestines which, when compromised, can lead to immune intolerance, food sensitivities, and food reactions. The mucosa constantly evaluates all foreign proteins that are ingested, including food proteins, and distinguishes which proteins are self or foreign material. This function involves the local immune system throughout the GI tract and plays a major role in forming what is called “immune tolerance” or “oral tolerance.”¹

The cells in the intestines under the mucosal protective layer are equipped with tight junctions, enabling them to bridge between the cells and form a tight barrier that only allows extremely small molecules to pass through. However, tight junctions can selectively open their gates to allow certain antigens through; this function is coordinated with the immune system.

The physiological function of the local GI immune system, known as “gut-associated lymphoid tissue” (GALT), does not usually result in immune reactions against self-proteins, but protects against pathogens. The tolerance of mucosal immunity depends upon intentionally dampening the immune reaction against friendly antigens, such as those found in common foods. If this dampening does not occur, immune reactions to foods may develop. This food-immune reactivity is not an allergy or disease at this point, but it may cause diverse, nonspecific discomfort throughout the body.

Healthy Intestine

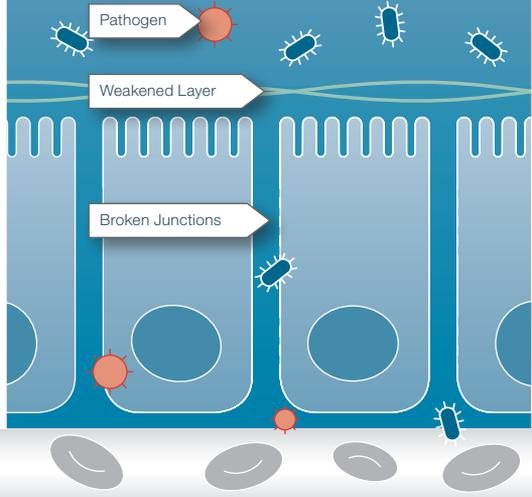


Mucosal immune tolerance starts with the proper breakdown of foods by digestive enzymes. Our body produces various digestive enzymes that help break down proteins, fats, and carbohydrates. The most active digestive factors in the stomach include hydrochloric acid and pepsin.

However, the most comprehensive and effective groups of digestive enzymes are found in the small intestine and include protease, amylase, lipase, sucrase, phytase, pectinase, cellulase, lactase, alpha-galactosidase, and glycoamylase. All of these enzymes together provide and support a complete digestive process. These enzymes break down the foods we eat into amino acids, sugars, and other small particles that are then absorbed by our mucosa.

If food proteins are not broken down into smaller peptides, the mucosa may not recognize these

Compromised Intestine



compounds and may react to them as if they are foreign compounds.

Once the foods we eat are properly broken down, they are absorbed in the small intestine. Normally, food proteins—even if broken down into small peptides—cannot penetrate the tight junctions.

However, intestinal tight junctions may be affected by factors, such as poor diet, and environmental stress factors and triggers, such as gluten sensitivity and microbial invasion, which may play a role in the loss of tolerance to dietary proteins. Some immune-triggering peptides may breach the intestinal tight junctions and promote further impact on these tight junctions, creating a vicious cycle.

Ingested dietary food proteins travel down the GI tract from the small intestine to the large intestine. A special group of immune cells in

the gut wall called “dendritic cells” sample and introduce the antigenic sections of each protein to the immune system, determining if immune reactivity is necessary. Key vitamin support, including both vitamin A² and vitamin D,³ has been implicated in these immune processes and thus has potential to support food immune tolerance. Additionally, a healthy and diverse intestinal bacterial environment appears to play a critical role in mucosal immune tolerance.⁴⁻⁵

Various strains of beneficial probiotics and dietary short-chain fatty acids, or SCFAs (eg, butyrate, propionate, and acetate), which promote healthy microbial environment development, also appear to have a positive role in mucosal health and tolerance.⁶⁻⁹

The mucosa selects and transports protein antigens to lymph nodes throughout the intestines. In lymph nodes, they are sampled by immune cells to determine if the dietary protein is a “friend” or “foe.” The key immune cell necessary for immune tolerance is called a “regulatory T-cell” (T-reg cell), which is supported by vitamin D¹⁰ and glutathione.¹¹ After food proteins are broken down and absorbed, they are transported from intestinal circulation to the liver, where they are sampled and reacted upon by immune cells in the liver called Kupffer cells. Toxic compounds, environmental antigens, and hepatic clearance capacity are among the factors that can influence immune reactivity in the liver. Adequate levels of the antioxidant glutathione and healthy liver clearance may also contribute to mucosal health and tolerance.

References

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Dietary Plan for Mucosal Health & Immune Tolerance

The healthy Microbiome Diversity Diet™ supports food diversity and oral tolerance, enhancing your ability to eat as many diverse kinds of foods as you can tolerate. This diet includes a high-fiber, low-fat, and low sugar/carbohydrates approach to promote a healthy gut.

Dietary interventions may play an integral role in properly supporting mucosal health. Dietary recommendations should be determined by your healthcare professional, as food sensitivities need to be considered based on clinical evaluation.

One recommended approach to address mucosal integrity is to follow the healthy Microbiome Diversity Diet™, a diet that includes high-fiber, low-fat, and low sugar/carbohydrates to promote a healthy gut. The diet should limit or remove saturated animal fats, dairy products, sugar, and gluten.

Healthy Microbiome Diversity Diet™

The following are general dietary guidelines to support the above goals.

- 1-3 teaspoons of flaxseed powder, psyllium, hemp seeds, or chia seeds with water daily
- Vegetables (majority steamed, boiled, baked, or sautéed): The following can be consumed on a daily basis: bok choy, broccoli, burdock, carrots, cauliflower, Chinese cabbage, collards, daikon greens, daikon radishes, dandelions, green cabbage, kale, mustard greens, onions, parsley, pumpkins, scallions, turnips, watercress, and winter squash, such as butternut, buttercup, and acorn squash. Vegetables not recommended for regular use include: beets, potatoes, spinach, and zucchini.
- Legumes (preferably soaked): Recommended legumes include adzuki beans, chickpeas, and lentils. An inexpensive pressure cooker will thoroughly reduce the antigenicity of lectins in beans and grains. It also speeds cooking time and helps allow the use of fresh beans instead of canned.
- Occasional chicken, lean red meat, and fish that is less prone to heavy metal contamination



- Fermented foods, such as miso soups (gluten free), are highly encouraged.
- Consider eating sea vegetables like seaweed.
- Drink plenty of water and herbal teas. Avoid caffeine and alcohol.
- Eat organic foods whenever possible.
- Aim for whole foods over processed foods.

Lifestyle Recommendations

- Avoid cooking foods in microwaves.
- Avoid eating at least 2-3 hours before bed to ensure a more restful sleep.
- Relax for a few minutes before eating.
- Chew food thoroughly.
- Exercise regularly.

Increasing fiber intake through whole fruits and vegetables may help to assist in maintaining a healthy mucosal immune system through the function of regulatory T-cell homeostasis. Fiber can consist of starches, pectins, fructans, and cellulose, which can be used during the digestive process to make SCFAs such as acetate, butyrate, and propionate. SCFAs may be important mediators regarding the effects of gut microbiota on intestinal immune function. Butyrate, an important SCFA, may also play a role in supporting the immune system.

Recommended sources of fiber:

- Apples
- Apricots
- Grapefruits
- Legumes
- Oranges
- Squash
- Sweet Potatoes
- Yams

Due to their friendly natural probiotic content, fermented foods should be an integral part of a diet. Fermentation involves the bacterial conversion of starches and sugars into lactic and acetic acid. Consuming fermented foods may encourage a greater biodiversity of gut microbiota and also provide beneficial digestive enzymes that may aid in increasing nutrient absorption. **Fermented foods include coconut kimchi, pickled cucumbers, beets and other vegetables (sauerkraut), kefir, kombucha, tempeh, and miso, among others.**

A rotation diet may be beneficial initially to identify food sensitivities. The concept of a rotation diet involves a specific food eaten on a particular day and then not repeated until the rotation restarts. When certain foods are consumed repetitively, a patient may become more prone to damaging his or her mucosal lining, causing food sensitivities to those particular foods. The rotation cycle commonly lasts 4 days, but longer durations may benefit more severe cases. Your healthcare professional will guide you in selecting the appropriate dietary plan.



Nutritional Support for Mucosal Health & Immune Tolerance*

The following formulas are intended to complement your healthy Microbiome Diversity Diet™ plan. Use as directed by your healthcare professional. These formulas are intended for nutritional support and should not be used to diagnose, treat, cure, or prevent any disease.

DIGESTIVE ENZYMES



EnzymixPro™ incorporates a special proprietary blend of various enzymes, including brush border enzymes, that has

been meticulously designed to support the gastrointestinal system.* This formula combines a broad spectrum of enzymes to help support the digestion of sugars, starches, fibers, proteins, and fats.* It also includes HCl for further digestive support.*

HEALTHY MICROBIAL ENVIRONMENT*



EnteroVite™ incorporates nutrients and a proprietary blend of fatty acids in a formulation intended to support the intestines and

intestinal cell function.* This unique formulation is designed for those who are sensitive to certain food components, such as certain starches and fibers, and who want additional intestinal support.* Short-chain fatty acids (SCFAs), normal bacterial end products of complex carbohydrates, play important roles in intestinal microbial balance and function.*

HEALTHY MICROBIAL ENVIRONMENT*



Sibiatica™ incorporates key strains of probiotics that are intended to support the intestinal microbial environment as well as the

intestinal mucosal barrier.* This innovative product may also help support the immune system via certain immune pathways.*

MUCOSAL & INTESTINAL SUPPORT*



RepairVite-SE™ helps support intestinal cell metabolism and the intestinal microbial environment with a formula incorporating

brush border enzymes, L-glutamine, and zinc carnosine.* The number of ingredients is limited to accommodate those with certain dietary restrictions.

MUCOSAL & INTESTINAL SUPPORT*



Liqua-A™ provides high-potency antioxidant vitamin A (100% DV per serving) and is delivered in an oil solution for optimum utilization.*

Vitamin A is an essential nutrient involved in a number of physiological functions and roles, including immune mechanisms, vision, and cell growth and development.* Vitamin A also supports the gastrointestinal barrier.* This product is also ideal for vegetarians and for those on diets with a low fat content, since vitamin A is a fat-soluble vitamin.*

MUCOSAL & INTESTINAL SUPPORT*



Liqua-D™ supports the immune system and the skeletal system by offering high-potency vitamin D (cholecalciferol) in a liquid form.* Each drop

contains 2000 IU of vitamin D, which is 500% of the recommended daily value.

PROPER HEPATIC CLEARING*



ClearVite-GL™ is designed to offer gastrointestinal and metabolic support without the use of rice and pea protein for those with sensitivities

to grains or peas, or who require low

carbohydrate content.* It includes 5 grams of amino acids per serving as a protein substitute and for targeted nutritional support, especially for the small intestine.*

IMMUNE SUPPORT*



Glutathione Recycler™ is a first-of-its-kind formula designed to support the synthesis and recycling of glutathione, which is

a key factor in the body's antioxidant processes.* It is intended to support intracellular glutathione activity using key nutrients and substrates, and its proprietary blend is also designed to support glutathione activity and related enzymatic processes.*

IMMUNE SUPPORT*



Histo-X™ is an advanced formula that incorporates numerous natural compounds to support immune function and the

body's response to foods and other environmental factors.* Offering key phytochemicals, such as petasin and isopetasin, this formula may also aid in gastrointestinal function and antioxidant processes.* Additionally, it may help support peripheral blood flow to the major organs.*

* This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Nutritional and Dietary Guide



Dietary Support See dietary plan for food recommendations.	Nutritional Support* As directed by your healthcare professional.
Breakfast	
Healthy Breakfast	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 10px;">CLEAR PHASE*</div> <ul style="list-style-type: none"> EnzymixPro™ 1-2 capsules Glutathione Recycler™ 2 capsules Histo-X™ 1-3 capsules Liqua-A™ 3 drops Liqua-D™ 2 drops ClearVite-GL™ 1 scoop </div>
Lunch	
Healthy Lunch	EnzymixPro™ 1-2 capsules
Dinner	
Healthy Dinner	<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 10px;">RESTORE PHASE*</div> <ul style="list-style-type: none"> EnzymixPro™ 1-3 capsules Sibiotica™ 1 capsule EnteroVite™ 1-2 capsules Liqua-A™ 3 drops Liqua-D™ 2 drops RepairVite-SE™ 1-2 scoops </div>
As Needed	
GlutenFlam™ if gluten or casein (milk) are unintentionally ingested.	

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Healthy Lifestyle Tips

Healthy Eating

- Avoid foods with artificial food coloring as they can compromise the breakdown and digestion of proteins.
- Eat up to 5 small meals a day. When meals are skipped or infrequent, this can lead to an increase in hunger and may cause overeating. Skipping meals can also deprive your body of nutrients that are necessary to ensure program success.
- Start your day with a healthy breakfast. When you skip breakfast, your body is more likely to go into fasting mode, storing fat and burning muscle for energy.
- Enjoy your food and be careful not to eat too quickly. Your stomach can take up to 20 minutes to tell your brain you are full.

Healthy Dining Out

- Eating small snacks throughout the day helps prevent overeating when you dine out.
- When eating out, order menu items that are similar to food you would prepare at home from your dietary plan. With large portions, prepare a take-home box before you start eating.
- When eating out, make sure you discuss any food sensitivities, such as gluten and dairy, with your server.

Healthy Shopping

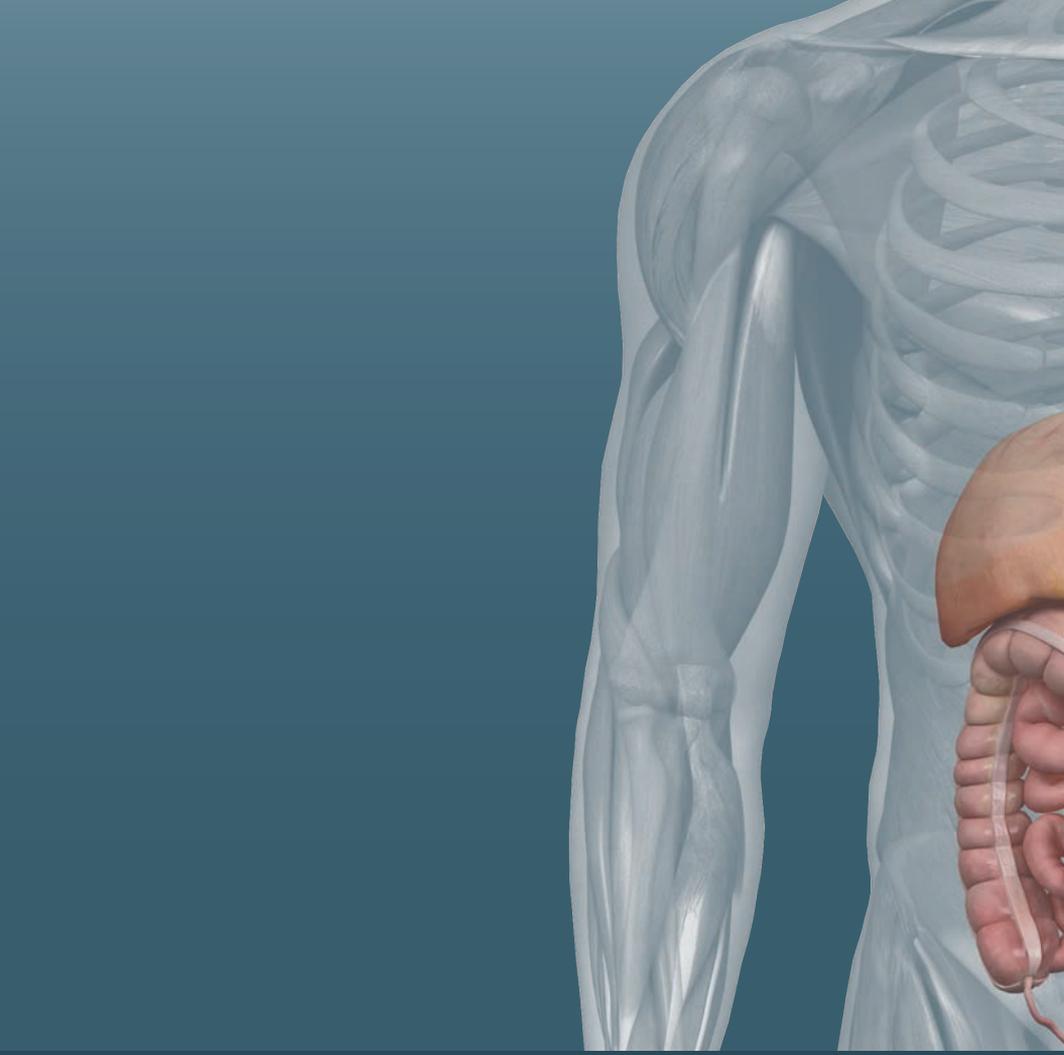
- Look at food labels for ingredients such as gluten that you plan to avoid.
- Try fresh and organic foods that are USDA-certified organic.
- Choose fish that is caught wild, as opposed to farm raised, or select chicken, turkey, or beef that is free-range and hormone free.

Healthy Menu Planning

- Create a weekly menu plan. Shop and prepare your food to make cooking easy and convenient throughout the week.
- Have healthy snacks available when you get home, including cut-up raw vegetables for quick salads and snacks.

Healthy Living

- Take time to give your body and mind an opportunity to rest.
- Deep breathing for 5-minute intervals helps you relax and calm your nervous system.
- In a quiet room, lie down on your back and elevate your feet on a chair or stool and relax.



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