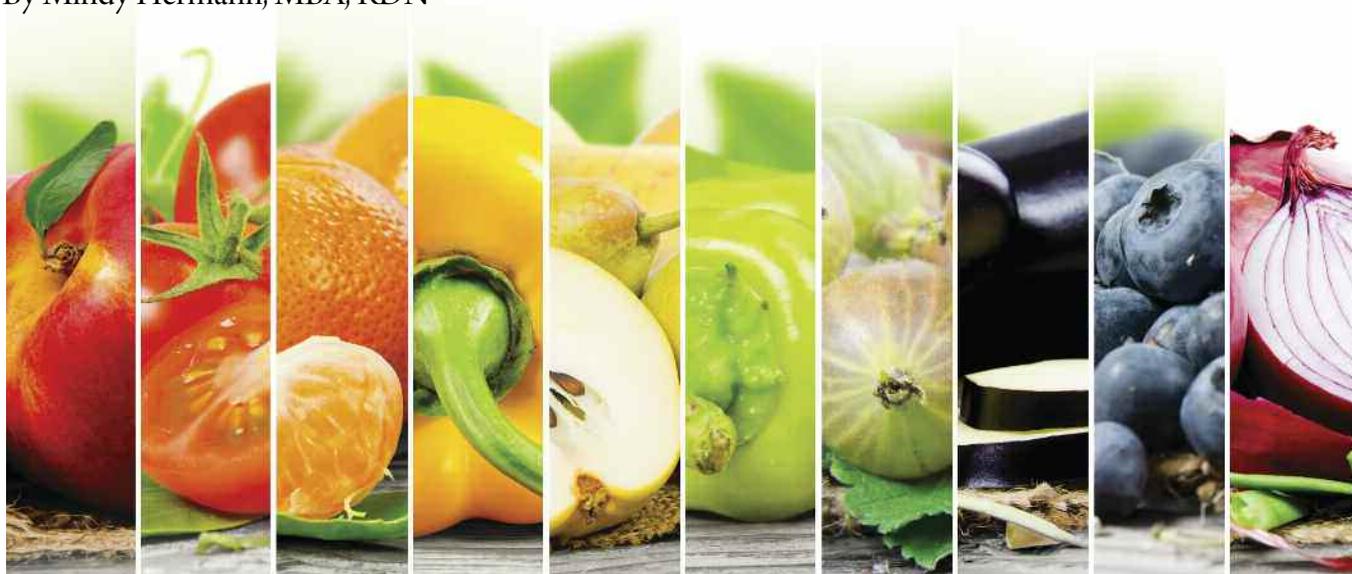


The Role of Nutrition in Treating Autoimmune Disease

A number of dietary approaches can help in the prevention and management of autoimmune disease, but an individualized plan with the assistance of a dietitian and/or physician is recommended.

By Mindy Hermann, MBA, RDN



AS THE SAYING goes, you are what you eat. So it makes sense to take a closer look at diet when faced with a serious health challenge such as an autoimmune disease. While there's no shortage of nutrition information and advice on the Internet, particularly pertaining to conditions that medicine cannot cure, much of the information is not scientifically proven and can, in some cases, be dangerous. Still, a carefully chosen diet may play a role in treating and managing the symptoms of autoimmune disease.

The Autoimmune Protocol (AIP) Diet — Newest Kid on the Block

Type the terms “autoimmune” and “nutrition” into an Internet search engine, and the results will include dozens of articles on the Autoimmune Protocol (AIP) diet, a highly restrictive eating plan that promises to reduce intestinal inflammation, heal the intestinal mucosa and lessen inflammation throughout the body. Stricter than the meat-centric Paleo diet, AIP encourages

followers to limit their diet to meats and organ meats, fish, seafood, vegetables, some fruits and fermented foods, while eliminating grains, gluten, legumes (beans), potatoes, sugar and most dairy. AIP also restricts nuts, seeds, eggs and nightshade vegetables such as tomatoes, eggplant and peppers. Proponents also recommend combining diet and gut-healing with treatment for bacterial overgrowth of the small intestine, where indicated, and supplements for boosting immunity.

Where the AIP diet comports with more established approaches is in its support of an elimination phase that strictly limits foods in an effort to reduce gut inflammation by eating only those foods that are unlikely to cause an adverse reaction. Because food intolerances and tolerances are highly individual, an elimination approach with gradual reintroduction of certain foods allows the person with autoimmune disease to pinpoint foods that are best tolerated. Elimination diets are challenging to follow, particularly without the help of a health professional.

Credentialed nutritionists caution against the AIP diet and other severely limited eating plans. They can be nutritionally unbalanced and should be followed only under close supervision. Also, any promised effects of the AIP diet on autoimmune disease and inflammation have not yet been substantiated by clinical research. That said, people with an autoimmune disease can and should pay attention to certain diet elements and individualize their diet to maximize comfort and potential health benefits.

Minding the Microbiome

Increasingly, research is connecting bacteria in our body with health and illness. The microbiome, or microbiota, the bacteria living in the large intestine, plays a major role in immune function and health. Approximately 70 percent of the body's immune system is located in the intestinal tract. The microbiota forms a protective layer or barrier in the intestine, interacts with the development and functions of intestinal innate and adaptive immunity, and protects the body from ingested allergens and harmful bacteria, viruses and parasites.

An unhealthy or unbalanced microbiota may contribute to inflammation and is thought to exacerbate the development of autoimmune diseases. Harmful bacteria carry and produce toxins that can damage the protective mucus layer in the intestine, make the intestine more permeable and possibly trigger autoimmune disorders. These include lipopolysaccharide (LPS) on the outer membrane of certain types of bacteria, and flagellin, a protein in the flagella, or tail, of gut pathogens such as Salmonella, E. coli, and Campylobacter. However, researchers have not yet established whether harmful changes in the microbiome lead to autoimmune disorders and whether inflammation causes changes in the microbiome.

Numerous factors can contribute to an unbalanced gut microbiota, including illness, antibiotics and diet. Recent research is considering whether common emulsifiers in processed foods, namely polysorbate 80 and carboxymethylcellulose (cellulose gum), might contribute to inflammation and harm healthful bacteria in the microbiome.

Prebiotics Nourish Beneficial Bacteria and Probiotics

Keeping the microbiota healthy may be more effective than trying to correct an imbalance. That is why one of the best ways to maintain gut health is to eat a diet rich in prebiotics. Prebiotics are specific carbohydrates that are not digested in the small intestine; they travel intact to the large intestine where they are "eaten" by beneficial bacteria. Kate Scarlata, a registered dietitian nutritionist, points out the importance of keeping the

gut microbiota well fed to help prevent them from eating the intestine's protective mucus lining.

A handful of foods naturally contain prebiotic fibers, including chicory root (its fiber is called inulin), Jerusalem artichoke, garlic, leek, onion and dandelion greens. Resistant starch, found in raw oats, potatoes, cashews and resistant starch supplements, also functions as a prebiotic. Prebiotic supplements also are available. When used, they should be added to the diet slowly to help maintain gut comfort.

Prebiotics also feed probiotics, certain beneficial bacteria strains that are not native to the human gastrointestinal tract and convey specific health benefits. Strains of bifidobacteria and lactobacilli, found in some yogurts, fermented foods and probiotic supplements, are among the most common. Probiotics do not become part of the body's microbiota and, therefore, have to be eaten regularly and in adequate amounts to be beneficial.

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FODMAPS May Improve Intestinal Comfort

Finding a balance between feeding beneficial bacteria, which can produce gas as they ferment (digest) fiber, and reducing discomfort associated with an irritable bowel can be challenging. Some people manage their gastrointestinal symptoms with a diet that limits short-chain sugars called fermentable oligosaccharides, disaccharides, monosaccharides and polyols, abbreviated as FODMAPs. Limiting FODMAPs gives bacteria less fermentable food to feast on and, therefore, leads to less gas.

Because so many foods contain FODMAPs, including numerous vegetables, fruits and grains, a diet low in FODMAPs can be nutritionally unbalanced unless it is planned and overseen by a dietitian or qualified health professional. Followers of a low FODMAPs diet may be able to slowly add back foods and monitor their comfort level to find those that are best tolerated.

A Gluten-Free Diet Benefits Some

Looking beyond the still popular gluten-free trend, a gluten-free diet may benefit some people with autoimmune disease. In sensitive individuals, exposure to gluten — a protein in products and ingredients that contain wheat, barley or rye — causes an

Common Foods High in FODMAPs

Vegetables	artichoke, asparagus, cauliflower, dry beans, garlic, mushrooms, onions, scallions
Fruits	apples, avocado, blackberries, cherries, dried fruit, mango, nectarines/peaches, pears, plums, pomegranate, watermelon; fruit juices
Grains and nuts	almond meal, pistachios, wheat products (breads, crackers, pastries, cereals, noodles/pasta, etc.)
Dairy	milk, ice cream, sour cream, yogurt
Prebiotics	fructooligosaccharides (FOS), inulin, oligofructose
Sweeteners	agave, honey, inulin, sweeteners ending in -ol

Low FODMAPs Foods

Vegetables	bean sprouts, bok choy, broccoli, cabbage, carrots, corn, cucumber, eggplant, green beans, kale, lettuce, peppers, potatoes, squash, sweet potato, tomato
Fruits	bananas, berries (most), citrus (most), grapes, kiwifruit, melon, pineapple, rhubarb
Proteins	most meat, poultry, fish, seafood, tofu
Grains and nuts	gluten-free breads, wheat-free breads, buckwheat, brown rice, non-wheat whole grains, potato chips, corn, oat or rice cereals, most nuts and seeds, quinoa, peanut butter, nut milks
Dairy	lactose-free milk, yogurt and cheese, butter, most cheeses, eggs
Other	sugar substitutes (not ending in -ol), chocolate, ketchup, maple syrup, mayonnaise, mustard, soy sauce, sugar, vinegars

immune system response and can result in inflammation and increased intestinal permeability. Removing gluten improves, but may not completely normalize, the intestinal barrier, and may or may not affect the progression of autoimmune responses.

Scarlata notes that some people are sensitive to components in wheat other than gluten, including glucose, fructans or amylase inhibitors. Heirloom wheat varieties and wheat grains from Europe may be better tolerated, and gluten-free grains always are recommended.

Omega-3 Fatty Acids Consistently Show Benefits

Omega-3 fatty acids are a type of fat found primarily in fatty fish and fish oil, and in a less potent form in walnuts, flaxseeds

and chia seeds. Of the main types of omega-3 fatty acids, DHA appears to be more biologically active than EPA and ALA. The 2015 Dietary Guidelines for Americans recommends two weekly servings of fish, for an average of about 250 mg/day EPA plus DHA omega-3 fatty acids.

Animal studies suggest that omega-3 fatty acids may improve autoimmune disorders. In mice, those fed a diet that was enriched with omega-3s showed improvement in autoimmune antibodies, autoimmune response, inflammation and intestinal barrier function. Human studies suggest that fish oil supplements lessen joint discomfort in some individuals and may benefit lupus, among other benefits.

Turn Up the Heat on Autoimmune Responses

Capsaicin is a naturally occurring chemical compound that gives chili peppers their heat. In the body, capsaicin activates the vanilloid receptor, which may enhance immune status and improve particular immune functions. Results are preliminary, and additional research needs to be done, but in the meantime, adding hot sauce as tolerated is unlikely to hurt.

A Sensible Diet Makes the Most Sense

Health professionals generally agree that the best diet for managing inflammation and optimizing any immune benefits includes whole foods — green leafy vegetables, fruits, higher fat fish such as salmon and sardines, nuts and seeds, whole grains, legumes and healthy fats — and limits processed starches, sugars, saturated fats and trans fats.

Scarлата advises moderation over extremes. She cautions against overusing trendy therapies such as probiotics and fermented foods, noting that more is not necessarily better. On her list for supporting immune health are more food sources of omega-3s and the mineral magnesium (nuts, seeds, leafy greens, fish, legumes, whole grains), less saturated fat and fewer food additives. Individuals who have trouble tolerating dairy products may want to try sheep or goat cheese; both contain a well-tolerated type of milk protein called A2 casein and lack the A1 casein, in most cows' milk and milk products, that appears to bother some people.

Several nutrients are associated with a strong immune system. Vitamin A supports barrier cells and lymphocytes and may lessen lupus symptoms, vitamin E protects cell membranes and vitamin D both generates more immune cells and makes them more active. The relationship between vitamin D and autoimmune disease is being actively studied. People with autoimmune diseases tend to have lower vitamin D levels, but it is not yet known whether a) low vitamin D levels increase risk of autoimmune disease and b) increasing vitamin D levels will improve immune function.

Vitamin A is found in many fruits and vegetables, as well as milk. Foods high in vitamin E include vegetable oils, green leafy vegetables, nuts, seeds and whole grain bread. Food sources of vitamin D currently are limited to fortified dairy products, fortified juices, egg yolks, some mushrooms and some fatty fish. The Dietary Guidelines for Americans calls out vitamin D as a nutrient of concern since a high percentage of Americans do not get enough in their daily diet. This may lead to fortification of additional foods. The decision regarding relying on foods versus supplements for vitamins and minerals is best left to a medical team.

Autoimmune diseases and their treatment can adversely affect nutrition. Individuals with bacterial overgrowth of the small intestine may have trouble absorbing fat if bacteria break down bile, the body's fat emulsifier. The side effects of common medications include nausea and vomiting, stomach pains, mouth sores, decreased appetite and interaction with certain nutrients. Cutting down on outdoor physical activity during flare-ups reduces exposure to sunlight and lessens production of vitamin D. In these instances, individual, multiple or multi-nutrient supplements may be the best option for improving nutrient intake.

An Individualized Approach Is Best

Finding the right combination of diet and supplements takes time, patience and close attention to food-related symptoms. The ultimate goal is to balance nutritional adequacy with gut comfort and, hopefully, immune benefits. ■

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Sources

1. Arrieta, MC, Bistritz, L, and Meddings, JB. Alterations in Intestinal Permeability. *Gut*, 2006 Oct;55(10):1512-20.
2. Bates, MA, Brandenberger, C, Langohr, II, Kumagai, K, Lock, AL, Harkema, JR, Holian, A, and Pestka, JJ. Silica-Triggered Autoimmunity in Lupus-Prone Mice Blocked by Docosahexaenoic Acid Consumption. *PLoS One*, 2016 Aug 11;11(8):e0160622. doi: 10.1371/journal.pone.0160622. eCollection 2016.
3. Dunne, S. CPE Monthly: Vitamin D — Learn About Its Impact on the Immune System, Its Role in Autoimmunity, and Its Importance for Specific Autoimmune Diseases. *Today's Dietitian*, December 2016 Issue, Vol. 18, No. 12, P. 48.
4. Duriancik, DM, Comstock, SS, Langohr, IM, and Fenton, JJ. High Levels of Fish Oil Enhance Neutrophil Development and Activation and Influence Colon Mucus Barrier Function in a Genetically Susceptible Mouse Model. *Journal of Nutrition and Biochemistry*, 2015 Nov;26(11):1261-72. doi: 10.1016/j.jnutbio.2015.06.002. Epub 2015 Jul 17.
5. Kriegel, MA, Manson, JE, and Costenbader, KH. Does Vitamin D Affect Risk of Developing Autoimmune Disease?: A Systematic Review. *Seminars in Arthritis and Rheumatism*, 2011 Jun;40(6):512-531.e8. doi: 10.1016/j.semarthrit.2010.07.009. Epub 2010 Nov 2.
6. Mu, Q, Zhang, H, and Luo, XM. SLE: Another Autoimmune Disorder Influenced by Microbes and Diet? *Frontiers in Immunology*, 2015 Nov 30;6:608. doi: 10.3389/fimmu.2015.00608. Review.
7. Palmer, S. Is There a Link Between Nutrition and Autoimmune Disease? *Today's Dietitian*, Vol. 13 No. 11 P. 36. Accessed at www.todaysdietitian.com/newarchives/110211p36.shtml.
8. Pestka, JJ, Vines, LL, Bates, MA, He, K, and Langohr, I. Comparative Effects of N-3, N-6 and N-9 Unsaturated Fatty Acid-Rich Diet Consumption on Lupus Nephritis, Autoantibody Production and CD4+ T Cell-Related Gene Responses in the Autoimmune NZBWF1 Mouse. *PLoS One*, 2014 Jun 19;9(6):e100255. doi: 10.1371/journal.pone.0100255.
9. Prandi, B, Faccini, A, Tedeschi, T, Galaverna, G, and Sforza, S. LC/MS Analysis of Proteolytic Peptides in Wheat Extracts for Determining the Content of the Allergen Amylase/Trypsin Inhibitor CM3: Influence of Growing Area and Variety. *Food Chemistry*, 2013 Sep 1;140(1-2):141-6. doi: 10.1016/j.foodchem.2013.02.039. Epub 2013 Feb 21.
10. Shoda, H, Yanai, R, Yoshimura, T, Nagai, T, Kimura, K, Sobrin, L, Connor, KM, Sakoda, Y, Tamada, K, Ikeda, T, and Sonoda, KH. Dietary Omega-3 Fatty Acids Suppress Experimental Autoimmune Uveitis in Association with Inhibition of Th1 and Th17 Cell Function. *PLoS One*, 2015 Sep 22;10(9):e0138241.
11. Steiner, TS. How Flagellin and Toll-Like Receptor 5 Contribute to Enteric Infection. *Infection and Immunity*, 2007; 75:545-52.
12. Tam, M, Gómez, S, González-Gross, M, and Marcos, A. Possible Roles of Magnesium on the Immune System. *European Journal of Clinical Nutrition*, 2003 Oct;57(10):1193-7.
13. Vieira, SM, Pagovich, OE, and Kriegel, MA. Diet, Microbiota and Autoimmune Diseases. *Lupus*, 2014 May;23(6):518-26.
14. Viennois, E, Merlin, D, Gewirtz, AT, and Chassaing, B. Dietary Emulsifier-Induced Low-Grade Inflammation Promotes Colon Carcinogenesis. *Cancer Research*, 2016 Nov 7. [Epub ahead of print].

Resources

1. Autoimmune Lifestyle. What Is Autoimmune Paleo or AIP Diet? Accessed at aiplifestyle.com/what-is-autoimmune-protocol-diet.
2. Omega Quant. Dietary Sources Omega-3 DHA. Accessed at www.omegaquant.com/sources-of-omega-3-dha.
3. Low FODMAP Central. Accessed at www.nestlehealthscience.us/lowfodmap/health-care-professionals.
4. BENE0 Institute. Accessed at www.beneo.com/Expertise/BENE0-Institute.
5. Kate Scarlata, RDN, www.katescarlata.com, 508-533-3190.