Integrative and Comprehensive Approach to Inflammatory Bowel Disease

Dr. Ronald L. Hoffman, MD, CNS, FACAM
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Introduction

Less than 1 percent of the U.S. population suffers from an inflammatory bowel disease (IBD), and yet TV commercials for IBD drugs still plaster the airwaves. These drugs are worth the advertisements cost because they’re expensive—sometimes tens of thousands of dollars per person per year—and the people with these conditions desperately need treatment.

Yet, IBD is often misunderstood. Several risk factors have been identified for the group of conditions that fall under the IBD label, however there are still unknown factors at play. Pharmaceutical and surgical approaches to IBD can help patients, but come at a cost of side effects and money. For example, foods that soothe symptoms in one person’s gut may inflame another person’s gut. In the frustrating quest for treatment, a paradigm emerged that diet did not cause IBD, and could not really treat it. Typical diet recommendations can improve calorie intake, and perhaps ease symptoms, but most dietary recommendations are not aimed at controlling the condition.

Thanks to the insistence of patients and their doctors, there have been new inroads into dietary treatments of IBD. Dr. Ronald Hoffman, MD, explains the current understanding of IBD, as well as the supplement and dietary approaches physicians can use to help their patients heal. In some cases, IBD patients can live without depending on expensive pharmaceutical treatments.
The IBD Umbrella

IBD is not one condition, but several related conditions. Although there are different diagnoses under the IBD umbrella, there is enough overlap that they can benefit from similar nutritional approaches.

Ulcerative colitis and Crohn’s disease both inflame the intestinal tract. However, ulcerative colitis is mostly confined to the large intestine. Crohn’s disease can affect tissue all the way from the mouth to the anus. Collagenous colitis is a sub-type, and patients with this type of colitis tend to respond well to natural measures.

Microscopic colitis will appear red at the microscopic level on a colonoscopy pathology report. Patients with microscopic colitis may be on their way to developing ulcerative colitis, but haven’t gotten to that point yet. Patients with microscopic colitis also respond to natural interventions.

Pseudomembranous colitis is an example, or model, of sorts for how IBD can have an infectious component. Pseudomembranous involves inflammation, and even bleeding, in the colon. It is associated with the overgrowth of the bacterium Clostridium difficile, or C. difficile, which is a harmful bacteria strain that takes hold in the gut after antibiotic use.

Conventional Treatments

Conventional treatments for IBD often start with a type of medications called aminosalicylates, which include drugs such as mesalamine, or Lialda. If a patient’s gut is in a flare, then doctors commonly prescribe steroids. Long-term steroid use can result in severe side effects, so doctors often turn to immunosuppressive agents. These powerful agents are designed to knock down the immune response, which helps since IBD is an autoimmune condition. These agents can put patients at risk for some serious health problems, such as tuberculosis or opportunistic infections.

Other IBD treatments include injectable biologics, some of which block tumor necrosis factor. Biologics are very expensive and they often work for a while, but then sometimes cease to work.

Conventional
IBD Treatments

- Steroids
- Antibiotics
- Aminosalicylates
- Immunosuppressive agents (azathioprine, mercaptopurine, methotrexate, cyclosporine)
- Biologics (TNF-alpha blockers)
- Surgery
**Proposed Pathophysiology of IBD**

Heredity is thought to play a role in many IBD cases. Certain ethnic groups tend to be predisposed to IBD, especially Caucasians and Eastern European Jews of Ashkenazic descent. There is also some familial distribution, and IBD can run in families.

Altered intestinal permeability, otherwise known as leaky gut, is thought to be a major cause of IBD. The lining of the gut acts as a barrier between the body and any pathogens or irritants moving through, or residing in, the digestive system. The gut should keep harmful things out while absorbing helpful things, like nutrients. However, with altered intestinal permeability, the reverse can happen—the gut lets in irritants and doesn’t absorb nutrients.

The gut microflora, bacteria, in the human body play several important roles, one of which is to send biochemical signals to the immune system via the immune cells that line the gut. Dysbiosis, an unhealthy imbalance of gut bacteria strains, or infections can disrupt this communication. Infections and dysbiosis can activate cytokines, which start churning the immune system response, thus leading to macrophage and lymphocyte infiltration. White blood cells come rushing to the defense of what the immune system now thinks is an invasion at the level of the intestinal wall. This storm of inflammation can, in turn, lead to IBD.

**Potential Risk Factors for IBD**

Today, roughly 2 million Americans live with ulcerative colitis or Crohn’s disease. While still relatively rare, IBD are more common than in years past. IBD conditions are virtually non-existent in less industrialized countries. Experts speculate there is something increasing the risk for IBD within the modern Western lifestyle. The Western diet may have a lot to do with this, perhaps related to new processed foods with non-food ingredients.

The hygiene hypothesis is another contributing risk factor, namely that people aren’t exposed to enough germs in childhood and so their immune system may start to attack the body as if it were a threat. One emerging experimental treatment of ulcerative colitis
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is parasites. Patients drink a glass of pig whipworms, which are non-pathogenic parasites to humans. Early studies show that ingesting these parasites can improve ulcerative colitis, and may even help other types of autoimmune diseases. Researchers think parasites work because they give the immune system a target to fight. The immune system in an autoimmune disease is turning against itself, so a foreign parasite can divert the attack from the patient's body to an actual potential invader.

Various environmental and lifestyle factors are linked to IBD. Smoking can affect a person's risk for IBD in different ways. Interestingly, smoking may worsen Crohn's disease, but ulcerative colitis is one of the few conditions that get worse when someone stops smoking. Living at higher latitudes is a risk factor for IBD, which is likely due to sun exposure and vitamin D. Certain medications, such as antibiotics, acne medications, and proton-pump inhibitors, may increase the risk for IBD. Having an appendectomy also increases the risk. It's thought that the appendix may have some influence over the intestinal immune system, such as being a repository for good bacteria that can replenish the intestine after an illness or infection. Other potential risk factors can be lack of breastfeeding as an infant, and potentially selective serotonin reuptake inhibitors.

It's widely accepted that there is a gut-brain connection that acts like a two-way highway. Things going awry in the gut can affect someone's mood, and mood affects the gut. In this way, stress can exacerbate IBD. Stress can erode and inflame the intestinal tract, and there are various mechanisms by which someone might change their gut flora with stress. Unfortunately, IBD can breed stress creating a vicious cycle. Going to the bathroom often, finding blood in the toilet, or not being able to leave the house without keeping an eye out for the next bathroom is all very stressful. This makes stress management a key tactic to treating IBD.

Yeast is a hotly debated potential risk factor for IBD. In the 1970s and 1980s, researchers Orian Truss and William Crook noted that mice lacking a certain gene had less natural defense against fungal infections, and that humans who also lacked this gene were more likely to develop IBD. This idea became heresy in many medical circles for years, and openly linking IBD to yeast could endanger someone's medical career. However, recent research has linked Crohn's disease to the presence of a form of candida called candida tropicalis. Candida tropicalis is a facilitator for a harmful strain of bacteria called Serratia marcescens. It may not be the yeast itself that causes problems, but that yeast can encourage other bacteria to form biofilms in the intestine that are in some way harmful.

Microparticles found in toiletries may also play a role in IBD. For example, titanium dioxide is a whitening agent found in some supplements and toothpaste. People ingest this regularly, but titanium dioxide may be sharp and harmful in the gut. It even looks like tiny shards under the microscope. Aluminum silicates and calcium phosphate may also play a similar role.

There is some evidence that exposure to soil residue is linked to IBD. Soil residues sometimes find their way into foods and can cause irritation and inflammation. Carrageenan is likely less of a problem for people who have normal intestines, but some people may be susceptible to the adverse effects. In fact, some animal experiments testing dermatological agents create inflammation by injecting carrageenan under the skin.
IBD Diagnostics

Various lab tests can help doctors diagnose IBD. The Erythrocyte Sediment Rate (ESR), or “Sed” for short, is a quick inflammation test for ulcerative colitis and Crohn’s disease. C-reactive protein tends to be elevated in both ulcerative colitis and Crohn’s disease. Albumin levels can be a clue as to the severity of the disease. When someone is in a starvation state, or sick, the body does not make as much albumin.

To distinguish between ulcerative colitis and Crohn’s disease, a Perinuclear Anti-Neutrophil Cytoplasmic Antibodies (p-ANCA) test, which indicates ulcerative colitis, but is not present in Crohn’s disease, can be useful. However, anti-saccharomyces antibodies are present in Crohn’s disease. Abnormal iron levels can indicate IBD. Low iron levels and very high or very low ferritin levels often indicate ulcerative colitis, and sometimes Crohn’s disease.

The stool calprotectin can help determine if a patient has active IBD or is in remission. Typically, a patient in remission feels better, has a good white blood cell count, good albumin levels, a normal “Sed” rate, a normal C-reactive protein result, and a negative stool calprotectin test.

Food and IBD

Traditional views on diet and IBD

The official position of the Crohn’s and Colitis Foundation of America is that there is no evidence that any dietary regimen has a curative impact on ulcerative colitis and Crohn’s disease. Despite this status quo, desperate patients and doctors have noticed that what someone eats can influence the health of their gut.

Weight loss can become a significant problem for IBD patients, who face both a challenge in absorbing foods, but also finding foods that don’t irritate their systems. Traditionally, doctors treating IBD patients would focus on getting enough calories into a patient. This often means suffering patients are counseled to eat calorie-rich foods in amounts that would be unhealthy for the average person.

Elemental diets, ingestion of liquid nutrients, such as amino acids, fats, sugars, vitamins, and minerals, in an easily assimilated form, may be used to treat people with IBD struggling with weight loss and flares. However, elemental diets are difficult to follow outside the controlled environment of a clinic. Elemental diets are poorly tolerated long-term, they’re expensive, and they’re nutritionally incomplete.
Food intolerance, allergy and IBD

There are likely some allergic components to IBD, although more research is needed. Eosinophils are present in IBD patients, and histamine is present irritated tissue. Elimination diets, going without a certain food for an extended amount of time, and reintroduction reveal IBD patients often have intolerances to certain foods, including corn, wheat, soy, milk, yeast, eggs, potatoes, and citrus. However, food intolerances tend to be specific to the individual.

The Paleo Diet

The Paleolithic (Paleo) Diet is a grain-free diet designed to be ancestral, meaning it supposedly mimics the diet of humans in pre-industrial and pre-agricultural times. The Paleo Diet also eliminates beans, legumes, and nightshades, which include tomatoes, eggplant, and bell peppers that can be irritating. Loren Cordain, a Paleo Diet advocate and professor, is the progenitor of the diet, and he’s written extensively on the impact it can have on ulcerative colitis and Crohn's disease. The Paleo Diet often excludes foods rich in lectins, he says, as early research has shown lectins may increase gut permeability in susceptible individuals and may contribute to bacterial overgrowth.

The Specific Carbohydrate Diet

The Specific Carbohydrate Diet (SCD) has arguably had the most impact on IBD treatment paradigms. The diet first gained widespread attention in the 1990s in a book by Elaine Gottschall called “Breaking the Vicious Cycle.” Gottschall’s daughter was diagnosed with ulcerative colitis in the 1950s and, at that time, gastroenterologists thought the best and only form of treatment was to remove her colon. Gottschall kept seeking help for her daughter, who was also diagnosed with what was then called infantile schizophrenia, which would likely be considered autism today. Under the suggestion of a Dr. Sidney Valentine Haas, Gottschall started her daughter on a diet that would later be called the SCD, and saw promising results.

The idea behind the SCD is to break the cycle of bacterial proliferation by, in effect, starving the bacteria. Breaking the Vicious Cycle he diet has no disaccharides, which are thought to promote bacterial proliferation. This translates to no grains and a lower-starch diet.

Tests for IBD

<table>
<thead>
<tr>
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<tr>
<td>ESR</td>
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<tr>
<td>C-Reactive Protein</td>
<td>Increased</td>
<td>Increased</td>
</tr>
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<td>Albumin</td>
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</tr>
<tr>
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<td>Increased</td>
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<tr>
<td>Anti-Sacchromyces Ab</td>
<td>NC</td>
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</tr>
<tr>
<td>Iron, TIBC %</td>
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<td>Decreased</td>
</tr>
<tr>
<td>Ferritin</td>
<td>Decreased (or not)</td>
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</tr>
<tr>
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<tr>
<td>Fecal Leukocytes</td>
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<tr>
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<td>+</td>
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<tr>
<td>Stool Calprotectin</td>
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<td>+</td>
</tr>
<tr>
<td>Intestinal Permeability</td>
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</tr>
</tbody>
</table>

Breaking the Vicious Cycle

- Kill the bugs (antibiotic regimens)
- Promote healthy flora (pre- and probiotics)
- Fecal Transfer
- Alter bacterial substrate (diet)
Fish, chicken, eggs, meat, vegetables, and some fruits that don’t contain disaccharides are allowed. The SCD is structured, and a lot of support groups and resources are available for patients trying the diet.

The SCD tends to work well for a certain subset of patients, but it ranges from incredibly effective to not changing symptoms. Some reasons why the SCD fails may have to do with the failure of the patient to follow the diet, or it may be that some patients are too sick to respond. Clinicians should recommend the diet judiciously, and return their focus to stronger treatments if the patient isn’t responding to the SCD.

In one preliminary study of 11 patients on the SCD, 100 percent of participating patients had their symptoms reduced. Further, nine patients could manage their condition without TNF inhibitor therapy by sticking to the diet. Another small study in Journal of the American College of Nutrition followed six patients with moderate to severe juvenile Crohn’s disease. The patients started a diet developed by a podiatrist named Melvyn Grovit, who had severe Crohn’s disease. This diet is similar to the SCD in that it eliminates grains, but it also eliminates dairy products. The SCD allows dairy in the form of yogurt. The patients in the study also received nutraceuticals consisting of fish peptides, bovine colostrum, Boswellia serrata, curcumin, and a multivitamin administered daily. Lactobacillus GG was administered twice weekly, and recombinant human GH (rhGH) was administered daily. Within two months of starting the therapy, all six patients went into remission, with discontinuation of all pharmacological drugs. Three patients remained in sustained remission for four to eight years.

Various dietary approaches to IBD

When it comes to dietary treatments for IBD, there are a number of approaches, many of which overlap. For example, patients may try an allergy diet where they eliminate major food allergens, or they can go on the Fermentable, Oligo-, Di-, Mono-saccharides And Polyols (FODMAP) diet, which eliminates foods containing short-chain carbohydrates that are poorly absorbed. The FODMAP diet was originally designed for IBS, but it may help to address Crohn’s disease and ulcerative colitis.

However, while many of these diets overlap in terms of benefits from reducing carbohydrate intake, there is also a risk for a common drawback. Peter Gibson, a professor at Monash University in Australia came up with this concept of “Gibson’s Conundrum.” If a patient withdraws carbohydrates from their diet, they will break the vicious cycle of bacterial proliferation and cut down on bacterial overgrowth. Those
indigestible carbohydrates are also a substrate for the manufacture of short-chain fatty acids. This presents a dilemma to both doctors and patients of how low one can go with carb restriction. It may be that some patients who are stuck and not responding to the SCD need the re-addition of some resistant starch, such as green bananas or potatoes that have been cooked and cooled. This resistant starch fuels the bacteria to make short-chain fatty acids.

Other ways to break the cycle of bacterial proliferation include antibiotics or botanicals to suppress the overgrowth of bacteria, followed by treatment with prebiotics and probiotics to encourage healthy bacteria to recolonize the gut.

Fecal transfer from healthy donors to patients with ulcerative colitis has shown some benefit. One study investigating fecal transfer found placebo transfers resulted in 8 percent improvement, but fecal transfers only resulted in 20 percent improvement. There is also a risk of accidentally introducing a pathogen, such as cytomegalovirus, from a healthy donor to the susceptible patient.

Supplements and IBD

People suffering from IBD should aim to get nutrients from their diet and not rely only on supplements to make up the difference. However, some supplements can still play a role in restoring health and fighting the root causes of IBD.

Omega 3 fatty acids

Omega 3 fatty acids are thought to act as TNF-alpha inhibitors in IBD patients, but research on omega 3 fatty acids and IBD has produces mixed results. Part of the problem with studying omega 3 fatty acids as a treatment is that the high doses necessary to get a response are not well tolerated. Some people may need 15 enteric release capsules to see a result.

Vitamin D

Epidemiological studies have found a link between vitamin D, latitude, and IBD. Humans make vitamin D through direct sun exposure, and so areas with less sun are more likely to have residents with vitamin D deficiencies. Additionally, there are more cases of IBD in high latitudes such as New Zealand or Canada, compared to sunnier areas closer to the equator, such as Ecuador.

Vitamin D is also clearly implicated in the body’s immune response. Vitamin D is great for modulating immunity in autoimmune disorders like Multiple sclerosis or rheumatoid arthritis and, hence, may play a role in ulcerative colitis. IBD patients will likely want a high dose of vitamin D, perhaps 5,000-10,000 IUs, because their absorption is often impaired.
Probiotics

Many researchers are looking for a probiotic that can cure IBD. There is some evidence that Lactobacillus rhamnosus GG is a candidate. Some doctors have tried strains of E. coli as probiotics in Europe, such as E. coli Nissle 1917. E. coli is the most prevalent bacteria in the intestinal tract and needs to be restored in patients who suffered from dysbiosis. However, the U.S. has been resistant to E. coli probiotics, as any mention of E. coli is strongly associated with harmful E. coli strains.

Saccharomyces boulardii has been shown to be helpful for C. difficile infections, and it may be especially helpful in Crohn’s disease. Finally, many clinicians are recommending patients use something called VSL#3, which has had some small clinical trials, and is a mixture of various strains.

Multivitamins

Vitamin and mineral deficiencies are common in people with IBD. Ulcerative colitis and Crohn’s disease are, in a way, nutritional diseases. People with these conditions need extra nutrition to make up for malabsorption, but they often don't want to eat that much because they feel sick. Many patients with ulcerative colitis or Crohn’s disease have low vitamin E levels, low B12 levels, low zinc, and low beta carotene due to steatorrhea. Dysbiosis may lower vitamin K levels since bacteria in the lower intestinal tract make some of the vitamin K people need. The very medications prescribed for IBD, sulfasalazine and mesalamine, deplete folate.

IBD patients often have low iron levels, however, iron levels can be tricky to address in someone with IBD. Simply recommending iron supplements for IBD patients may worsen their condition. Iron is proinflammatory in the gut, and is an energy source for the proliferation of bacteria. Instead, it’s better to give IBD patients haem iron, which is found in meat, chicken and fish, and is easily absorbed, unlike non-haem iron found in plant foods. IBD patients who want to be vegan should be counseled on their choice based on their iron levels.

Some patients require IV iron, some are fine with iron pills, and some patients need iron injections.

Curcumin

Curcumin is a popular anti-inflammatory supplement, yet there are only a few studies investigating whether curcumin is helpful for IBD. Some in the medical field have argued that the type of curcumin supplements matters, and that the unadorned and not micro-encapsulated supplements are best.
Various supplements for IBD

Fish peptides are thought to have a healing effect on the intestinal wall and so are used by some doctors for IBD. Aloe may also help IBD, but should only be given in the purified aloe gel form, since there is a diarrhea-inducing agent in the aloe plant.

Other compounds and botanicals that may help treat IBD include:

- EGCG, or epigallocatechin gallate
- NAG, or N-acetyl glucosamine
- Melatonin
- Propionyl-L-carnitine with glycine
- Slippery elm
- Marshmallow root
- DHEA (best if sprayed under the tongue)
- Castor oil packs (for external use on the stomach)
- Low dose naltrexone (to upregulate the endorphin and enkephalin system)
- LDN

Glutamine is popular in many supplements and powders, but there’s some question as to whether it’s really that efficacious. Theoretically, glutamine would act as fuel for the enterocytes and help them repair. Yet, glutamine as it hasn’t panned out as well as doctors had hoped in studies.

Comfrey, often thought to be helpful, can be dangerous in long-term oral consumption. External application of comfrey is healing to the skin, but it should not be taken internally.
Case Studies

Examining a couple of case studies of people with IBD can demonstrate how these various natural treatments can apply to different aspects of IBD symptoms and complications.

Case study: 30-year-old woman

A 30-year-old woman came in for treatment for severe Crohn’s disease. The patient, “K.H.,” had a fistula with an intestinal resection. She was first put on Pentasa and did better for a while, but ultimately, she developed floating nausea, low energy, and decreased stamina. She regularly needed to take naps, her weight was under 119, she had many bloody bowel movements, and concerning lab tests. Her vitamin D levels were lousy, she had an ESR of 4, and her C-reactive protein level was 34, which is considered inflamed.

To turn her health around, K.H. agreed to change her diet and try SCD as well as a nutraceutical protocol and LDN. She drastically improved and, within a year and a half, she was running half-marathons. K.H. felt so great she fell off her regimen and began eating whatever she wanted, and unfortunately began to get sick again. Upon a second try of her treatment regimen, she again felt better, indicating that it wasn’t a fluke that she was in remission but her remission was dependent on her diet and integrative treatment.

Case study: Teen boy

In the second case study, patient “L.G.” was suffering badly from Crohn’s disease. In 2010, patient L.G. was referred to a new office for treatment and, although he was in his late teens, he only weighed 69 pounds. His hemoglobin was so low (6.1) that he nearly required a transfusion. His albumin was 1.8, and he had to undergo a resection.

Two years after starting integrative treatment, his weight increased to 105 pounds, his hemoglobin shot up to 15, and his albumin increased to 3.6. Today, he has improved even more, and weighs 135 pounds.
Conclusion

Doctors and researchers have a long way to go before completely understanding IBD, Crohn’s disease, or ulcerative colitis. There are a number of known risk factors, including heredity, latitude, stress, and dysbiosis. Yet, no single theory ties these together, nor settles debates about risk factors, such as yeast in the gut.

Expensive pharmaceuticals for IBD can, and do, offer relief. They also put patients at increased risk for serious infections, and large institutions have been slow to consider other treatment approaches. For years, the common wisdom was to ignore diet as a contributor of IBD. Some diet recommendations emerged to soothe symptoms or increase nutrition, such as eating calorie-rich foods or elemental diets, ut these approaches do not come close to offering a long-term, healthy solution for IBD.

Despite the longstanding lack of clinical trials or mainstream interest in dietary treatments for inflammatory bowel disease, doctors and patients have forged ahead trying things that might bring relief. The Paleo Diet, the SCD, and other regimens meant to starve unhealthy bacteria have helped people steer clear of flares. Supplements, botanicals, and nutraceuticals can help fight IBD, and improve nutritional health in the process.

Thanks to the results patients and individual doctors have found for themselves, there now appears to be new interest in studying dietary treatments. For example, the Crohn’s and Colitis Foundation have authorized a $2.5 million trial comparing the SCD to a Mediterranean diet in patients with Crohn’s disease. Future research will hopefully bring long-lasting, pragmatic relief to people suffering from IBD, Crohn’s and ulcerative colitis.

Biography

Dr. Ronald Hoffman is the founder and medical director of the Hoffman Center in New York City, one of New York’s first comprehensive practices for the delivery of innovative medical care. Dr. Hoffman is the author of numerous articles for the public and for health professionals, and is host of the popular nationally-syndicated radio program, Intelligent Medicine, and the Internet podcast of the same name. He is also the author of several books, including the “Diet Type Weight-Loss Program” (1989); “Seven Weeks to a Settled Stomach” (1991); “Tired All the Time? How to Regain Your Lost Energy” (1993); “Intelligent Medicine” (1997); “How to Talk with Your Doctor” (2006); and “Natural Cures That Really Work” (2007).

Dr. Hoffman is active in several medical professional organizations, and is a past president of the country’s largest organization of complementary and alternative doctors, the American College for Advancement in Medicine (ACAM).
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