

# Nutritional Interventions in the Patient with Inflammatory Bowel Disease

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## KEYWORDS

- Diet • Prebiotics • Probiotics • Dietary supplements • Microbiome
- Clinical remission • Crohn's disease • Ulcerative colitis

## KEY POINTS

- Foods that are consumed have effects on the intestinal microbiome and inflammation.
- There are sparse data on the effects of different diets on disease activity in inflammatory bowel disease.
- Nonetheless, there is emerging evidence to suggest that carbohydrate restriction may improve symptoms and inflammation.
- Curcumin may be effective for the maintenance of remission in ulcerative colitis.
- Probiotics (eg, VSL#3) may help induce remission in ulcerative colitis and prevent pouchitis.

## INTRODUCTION

Inflammatory bowel disease (IBD), which primarily comprises Crohn disease (CD) and ulcerative colitis (UC), is a chronic relapsing and remitting inflammatory disorder of the gastrointestinal tract. The etiologic factors of IBD are currently unclear, although it is believed to stem from interactions between an individual's underlying genetic risk, the intestinal microbiome, and environmental factors. Because nutrients play a strong role in shaping the intestinal microbiome and may themselves modify the inflammatory response, the diet has emerged as a potential factor that influences IBD pathogenesis and activity.<sup>1,2</sup> Moreover, the increased risk of IBD among populations migrating to western countries<sup>3,4</sup> and the increasing incidence of IBD in regions that have

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Disclosure Statement: The authors have nothing they wish to disclose.

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Gastroenterol Clin N Am ■ (2017) ■-■  
<https://doi.org/10.1016/j.gtc.2017.09.007>

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traditionally had a low incidence of IBD<sup>5</sup> have further led some investigators to suspect the westernization of diets to be an etiologic factor.

The principal premise of antiinflammatory diets used for the treatment of IBD relies on the reduction of proinflammatory food types and/or increase in food types thought to promote a favorable intestinal microbiota. For instance, the specific carbohydrate diet (SCD) and gluten-free diet recommend the elimination of certain carbohydrates and gluten, respectively, due to their suspected antigenic or proinflammatory effects. Diets that recommend a reduction in fat or meat intake relate to the knowledge that omega-6 fatty acids (found in red meats, fried fast foods, and pastries) are metabolic precursors of proinflammatory prostaglandins. On the other hand, other diets may recommend increased consumption of fish or omega-3 fatty acids because they are precursors of less inflammatory prostaglandins. Although the precise relationship between the intestinal microbial composition and inflammation is still unknown, the hypothesized relationship between the diet and the microbiome fuels recommendations to consume plant-based diets. This has also led to the investigation of probiotics and fecal microbiota transplantation as potential treatments for IBD. This article discusses the role of diverse diets and dietary supplements in the treatment of IBD.

## ORAL DIETS

### *Specific Carbohydrate Diet*

The SCD was initially conceived by Dr Sidney Haas, an American pediatrician, in the 1920s for the treatment of celiac disease.<sup>6</sup> The diet was later popularized in the 1980s by Canadian biochemist Elaine Gottschall in her book, *Breaking the Vicious Cycle*, after her 8-year-old daughter with UC was successfully treated with the SCD.<sup>7</sup> The SCD recommends the exclusion of complex carbohydrates in favor of monosaccharides that are purportedly easier for humans to digest and absorb. Consequently, fewer carbohydrates are available for bacterial fermentation, bacterial growth, and intestinal injury. The SCD is a rigid diet allowing unprocessed meats, poultry, eggs, fish, fruits, vegetables, all fats and oils, homemade fermented yogurts, and honey as a sweetener (Table 1).

A retrospective case series reported an improvement in clinical symptoms and laboratory indices in 7 children with active CD who were treated with the SCD for 5 to

**Table 1**  
Permitted and prohibited foods in the specific carbohydrate diet

Permitted Foods	Prohibited Foods
Unprocessed meats, poultry, eggs and fish	Preserved, packaged, deli meats
Most fresh fruits and vegetables (high amylose to amylopectin ratio)	Canned fruits or vegetables, starchy vegetables (eg, potatoes and yams)
All fats and oils including butter	
Aged cheeses >30 d	Soft cheeses (eg, cream, ricotta, mozzarella and cottage cheese)
Lactose free yogurt	Milk, store bought yogurts
Honey	Sugar, maple syrup, agave, artificial sweeteners
Legumes (lentils and most beans)	Grains (eg, wheat, rye, oats, rice, quinoa)
Nuts (almonds, pecans, peanuts, cashews, walnuts)	
Weak tea or coffee, water, club soda, scotch, gin, vodka, bourbon	Juice, soda, sweet wines, flavored liqueurs, beer

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