Nutrition Tips for IBD

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March 26, 2013
Interaction of various factors contributing to chronic intestinal inflammation in a genetically susceptible host
# Popular Diets for IBD

<table>
<thead>
<tr>
<th>Diet</th>
<th>Rationale</th>
<th>Plan</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elimination</td>
<td>Lower antigenic burden-up to 66% of CD pts. report food intolerances 1</td>
<td>Eliminate known and suspected provocative foods 2-4 weeks then reintroduce: 1 new food per day-process may take 2-3 months</td>
<td>Mishkin S. Am J Clin Nutr. 1997 Feb;65(2):564-7. Giaffer MH, Cann P, Holdsworth CD. Aliment Pharmacol Ther. 1991 Apr;5(2):115-25 study @ Hopkins for CD, and Univ Alberta</td>
</tr>
<tr>
<td>Specific Carbohydrate</td>
<td>Eliminate poorly digestible CHO’s to limit fermentation in small bowel.</td>
<td>Allowed: meat, fish, eggs, vegetables, nuts, low-sugar fruits, oils, honey Avoid: starches, grains, pasta, legumes, and breads</td>
<td>None-study at Northwestern, Chicago, IL</td>
</tr>
<tr>
<td>Maker’s Diet</td>
<td>40 day diet and lifestyle regimen based upon “biblical principles”</td>
<td>Focuses on four components of total health: physical, mental, spiritual, and emotional. Consists of a phased approach. Recommended foods are unprocessed, unrefined, and untreated with pesticides or hormones</td>
<td>None, founder Garden of Life Nutraceuticals</td>
</tr>
<tr>
<td>Anti-inflammatory Diet</td>
<td>Provide foods rich in flavonoids and phytonutrients</td>
<td>Avoid red meat, dairy-favor vegetables, fish, olive oil, walnuts, etc.</td>
<td>None, study @ Hopkins for CD, and Univ Alberta</td>
</tr>
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</table>

## Other Popular Diets

<table>
<thead>
<tr>
<th>Diet</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Gluten-free Diet</td>
<td>Excludes grains that contain the protein gluten. Used primarily in patients with celiac disease. Decreases complex carbohydrates which may affect bowel function.</td>
</tr>
<tr>
<td>South Beach Diet™ and Atkins Diet™</td>
<td>Both South Beach and Atkins diets restrict carbohydrates. Very strict diet at beginning followed by long-term eating plan. Decreases complex carbohydrates which may affect bowel function.</td>
</tr>
<tr>
<td>Elemental Diet</td>
<td>Consists of nutrients in their simplest form. High in carbohydrates, low in fats. Used in Europe as primary treatment for CD, but not considered as good as other treatments.</td>
</tr>
<tr>
<td>FODMAPs</td>
<td>Acronym for Fermentable, Oligo-, Di- and Mono-saccharides, and Polyols. Diet minimizes consumption of these fermentable carbohydrates to manage GI symptoms, including diarrhea, gas, and bloating. More commonly used for IBS.</td>
</tr>
</tbody>
</table>

Heller A; Scarlata K. *Today’s Dietitian*. 2010.
<table>
<thead>
<tr>
<th>Food</th>
<th>Duration</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extra virgin olive oil</td>
<td>Single meal</td>
<td>↓ TXB2 and LTB4</td>
</tr>
<tr>
<td>Tomato juice</td>
<td>10 days</td>
<td>↓ neutrophil airway influx in asthmatics</td>
</tr>
<tr>
<td>Tomato drink</td>
<td>26 days</td>
<td>↓ TNFalpha production by whole blood</td>
</tr>
<tr>
<td>Whole tomatoes</td>
<td>28 days</td>
<td>No change in CRP</td>
</tr>
<tr>
<td>Walnuts</td>
<td>Single meal</td>
<td>↓ monocyte mRNA for TNFα &amp; IL-6</td>
</tr>
<tr>
<td>Red wine</td>
<td>4 weeks</td>
<td>Reduced CRP and fibrinogen</td>
</tr>
<tr>
<td>Garlic powder</td>
<td>3 months</td>
<td>No effect on CRP, TNF-a</td>
</tr>
<tr>
<td>Flaxseed flour</td>
<td>2 weeks</td>
<td>↓ CRP, fibronectin &amp; serum amyloid A in obese subjects</td>
</tr>
<tr>
<td>Tea, black</td>
<td>12 weeks</td>
<td>40-50% ↓ CRP in subjects w/CRP&gt;3mg/L.</td>
</tr>
<tr>
<td>Tea, black</td>
<td>6 weeks</td>
<td>↓ CRP &amp; platelet aggregation in healthy men</td>
</tr>
<tr>
<td>Tea, green</td>
<td>4 weeks</td>
<td>No effect on CRP in men; no significant effect on CRP in male smokers</td>
</tr>
<tr>
<td>Cherries, sweet</td>
<td>4 weeks</td>
<td>↓ CRP and CCL5, no effect on IL-6 in healthy adults</td>
</tr>
</tbody>
</table>
# Top Food Antioxidants

Nutrient Data Laboratory, Agriculture Research Service, US Department of Agriculture

<table>
<thead>
<tr>
<th>Cinnamon</th>
<th>Wild blueberry</th>
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<tbody>
<tr>
<td>Aronia black chokeberry</td>
<td>Blueberry</td>
</tr>
<tr>
<td>Dry Small Red Bean</td>
<td>Cranberry</td>
</tr>
<tr>
<td>Dry Red kidney bean</td>
<td>Artichoke hearts</td>
</tr>
<tr>
<td>Dry Pinto bean</td>
<td>Blackberry cultivated</td>
</tr>
<tr>
<td>Dry Black bean</td>
<td>Raspberry</td>
</tr>
<tr>
<td>Prune ½ cup</td>
<td>Strawberry</td>
</tr>
<tr>
<td>Pecan 1 oz</td>
<td>Sweet cherry</td>
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Diet Research: Associations

2011 review article showed associations between dietary intake and risk of IBD

Fats and Meats
- High dietary intakes associated with an **increased** risk of IBD

Fiber and Fruits
- High dietary intakes were associated with **decreased** risk of CD

Vegetables
- High dietary intake was associated with **decreased** risk of UC

→ Take-home points
- Limitations with review (different studies, majority were retrospective), no particular foods, but component common to many foods may have a role, studies **did not** explore role of diet on current disease activity

Control IBD Symptoms

Avoid “trigger” foods
Not all IBD patients are affected by the same foods

Common foods that may cause GI discomfort:

• High-fiber foods (e.g., nuts, raw, leafy vegetables)
• High-fat foods (e.g., greasy, fried foods)
• Caffeine (e.g., coffee, tea, soda, chocolate)
• Alcohol
• Carbonated beverages
• Dairy (lactose)
• Sugar alcohols in sugar-free foods (e.g., sorbitol)
• Spicy foods
Prebiotics and Prebiotics: Exploring the Mutually Beneficial Effects of Bacteria and their Substrates in the Human Host

- Prevent infections (systemic and GI)
- Regulate local and systemic immune function
- Regulate bowel motility
- Regulate appetite (leptin, ghrelin)
- Regulate inflammation (local and systemic)
- Metabolic pathway nutrients: glycemic control, cholesterol, amino acids
- Support mucosal barrier
- Enhance nutrient utilization
- Prevent neoplastic changes
Benefits of Probiotics in IBD mechanisms of action

<table>
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<tr>
<th>Benefit</th>
<th>Probiotics Effect</th>
<th>Immunoregulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibit Pathogenic Bacteria</td>
<td>pH ↓</td>
<td>IL-10, TGF</td>
</tr>
<tr>
<td>Improve Epithelial Fx</td>
<td>SCFA’s ↑</td>
<td></td>
</tr>
<tr>
<td>Immunoregulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>↑ Bacteriocidal proteins</td>
<td>Healing ↑</td>
<td>TNF, IL-12 ↓</td>
</tr>
<tr>
<td>↑ Epithelia binding</td>
<td>Mucus ↑</td>
<td>sIgA ↑</td>
</tr>
<tr>
<td>↓ Epithelial invasion</td>
<td>Barrier Integrity ↑</td>
<td>NFκB ↓</td>
</tr>
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Pre and Probiotics in IBD: Summary

• Data “very” mixed, UC > Crohn’s
• Individual hosts may respond differently
• Not yet displacing conventional therapy
• Data on preventing relapse much better than as primary therapy
• Treatment of choice in pouchitis following total colectomy
• Combinations appear better than single stain
• Administration of existing probiotic preparations only transiently increase luminal concentration without permanently colonizing the intestine
GUT MICROFLORA

- Genes, receptors?
- Mode of birth
- Maternal flora
- Infant environment
- Antibiotics, drugs
- Probiotics
- Age
- Diet composition
- Non-digestible carbohydrates, Prebiotics
Diets For Microbiome Support

Specific carbohydrate diet
- Undigested carbohydrates feed “downstream” bacteria → further dysbiosis; see www.scdiet.org

FODMAP Diet:
- Low prebiotic, lactose, fructans, galactans, polyols (fermentable oligo- and disaccharides, monosaccharides, polyols)

Soluble fiber (e.g., modified citrus pectin)
- Paleolithic man consumed > 100 g fiber/day
- Increases beneficial short-chain fatty acids (SCFAs)

Fermented foods (e.g., Body Ecology Diet) — Restore and maintain “inner ecology” through:
- Cultured foods
- Decreasing sugars and carbohydrates
Other Probiotic Rich foods

- Miso
- Natto
- Tempeh
- Sauerkraut
- Kim chee
- Raw pickles
- Fermented sausages
- Root and ginger beers
- Pulke
- Kombucha
- Fermented vegetables
- Coconut kefir
- Buttermilk
- Raw whey
- Raw vinegars
- Fermented anything
- Sourdough?
- Essene bread?
- Beer
- Wine
Prebiotic Foods

- Jerusalem artichokes
- Onions
- Chicory
- Garlic
- Leeks
- Bananas
- Fruit
- Soybeans
- Burdock root
- Asparagus
- Sugar maple
- Chinese chives
- Peas
- Legumes
- Eggplant
- Honey
- Green Tea
- Yogurt, cottage cheese, kefir
Kefir grains, which are a symbiotic culture of yeasts and bacteria, are used to make kefir.

Main Ingredients: milk vs. non-dairy milk, kefir grains (bacteria, salt, yeasts, etc).

- Innoculate 24 hours
- Dairy (cow, lamb, goat, buffalo) or non dairy

“Let medicine be thy food and let food be thy medicine”

Hippocrates