

Fiber- and Residue-Restricted Diet

PURPOSE: The fiber- and residue-restricted diet is designed to prevent blockage of a stenosed gastrointestinal tract and to reduce the frequency and volume of fecal output while prolonging intestinal transit time.

USE: The diet can be used during acute phases of ulcerative colitis, regional enteritis (Crohn's disease), and diverticulitis and when stenosis of the esophagus or intestine occurs. The diet also may be used preoperatively to minimize fecal volume and residue and postoperatively for a short period during the progression to a general diet.

MODIFICATIONS: In planning a fiber-restricted diet, indigestible carbohydrate intake is reduced by using limited amounts of well-cooked or canned vegetables and canned, cooked, or very ripe fruits, and by replacing whole-grain breads and cereals with refined products. Legumes, seeds, and nuts are omitted.

A low-fiber diet is not synonymous with a low-residue diet. *Fiber* is the portion of carbohydrates not capable of being digested by enzymes in the human digestive tract, thus contributing to increased fecal output. *Residue* is the unabsorbed dietary elements and total postdigestive luminal contents present following digestion. Residue-containing foods tend to increase the fecal residue and stool weight despite their low-fiber contents. However, since low-residue diets are based on old literature, tradition, and studies on laboratory animals, tolerance to residue-containing foods should be assessed on an individual basis. Limited data are available on the actual residue content of foods and the efficacy of the low-residue diet.

Adherence to the guidelines on *Table 1* generally results in a diet that contains less than 20 g of fiber per day.

GUIDELINES FOR FOOD SELECTION FOR FIBER-AND RESIDUE-RESTRICTED DIET

TABLE 1

Food Category	Recommended	May Cause Distress
Beverages	Coffee, tea, carbonated beverages, strained fruit drinks; milk as tolerated*	Any containing fruit or vegetable pulp; prune juice**
Breads	Refined breads, rolls, biscuits, muffins, crackers; pancakes or waffles; plain pastries	Any made with whole-grain flour, bran, seeds, nuts, coconut, or raw or dried fruits; cornbread, graham crackers
Cereals	Refined cooked cereals including grits and farina; refined cereals including puffed rice and puffed wheat	Oatmeal; any whole-grain, bran, or granola cereal; any containing seeds, nuts, coconut, or dried fruit
Desserts and sweets	Plain cakes and cookies; pie made with allowed fruits; plain sherbet, fruit ice, frozen pops, yogurt, gelatin, and custard; jelly; plain hard candy; marshmallows; ice cream as tolerated*	Any made with whole-grain flour, bran, seeds, nuts, coconut, or dried fruit
Fats	Margarine, butter, salad oils and dressings, mayonnaise; bacon; plain gravies	Any containing whole-grain flour, bran, seeds, nuts, coconut, or dried fruit
Fruits	Most canned or cooked fruits**; applesauce**; fruit cocktail**; ripe banana**	Dried fruit; all berries; most raw fruit
Meats and meat substitutes	Ground or well-cooked, tender beef, lamb, ham, veal, pork, poultry, fish, organ meats; eggs and cheese	Tough, fibrous meats with gristle**; any made with whole-grain ingredients, seeds, or nuts; dried beans, peas, lentils, legumes; peanut butter
Potato and potato substitutes	Cooked white and sweet potatoes without skin; white rice, refined pasta	All others
Soups	Bouillon, broth, or cream soups made with allowed vegetables, noodles, rice, or flour	All others
Vegetables	Most well-cooked and canned vegetables without seeds** except those excluded; lettuce if tolerated; strained vegetable juice	Sauerkraut, winter squash, peas, and corn; most raw vegetables and vegetables with seeds
Miscellaneous	Salt, pepper, sugar, spices, herbs, vinegar, ketchup, mustard	Nuts, coconut, seeds, and popcorn

* Mixed consensus exists regarding the inclusion of milk on a low-residue diet. It has been suggested that because milk is not considered a high-residue food, it should not be eliminated from the -residue diet unless an individual has lactase deficiency. Some practitioners continue to limit milk and products containing milk to 2 cups per day, as suggested in previous literature.

** These foods are not necessarily high in fiber but may increase colonic residue; assess patient food tolerance and limit as needed. Residue may be further reduced by excluding all fruits and vegetables with the exception of strained juices and white potatoes without skins.

**RELATED
PHYSIOLOGY:**

Ulcerative colitis and Crohn's disease (regional enteritis), together referred to as inflammatory bowel disease (IBD), are disorders that affect the distal intestinal tract. Although precise causes remain obscure, hypothesized etiologies include genetic, infectious, environmental, immunologic, and nutritional factors.

Malnutrition associates with IBD can be due to inadequate intake, increased requirements, decreased absorption, and excessive gastrointestinal losses. Nausea, diarrhea, anorexia, and fear of eating due to anticipation of abdominal and/or rectal pain may contribute to the patient's poor intake. A diet low in fiber and residue has been used during acute phases of ulcerative colitis, diverticulitis, and Crohn's disease to limit the frequency and pain of stools and when the lumen of the colon is narrowed or stenosed.

An individual approach is extremely important, and every effort should be made to tailor the diet to the patient's preferences, tolerances, and type of surgery or illness, avoiding undue restrictions, when possible. Because a fiber-restricted diet tends to be more liberal than a fiber- and residue-restricted diet, the need for reduced colonic residue should be evaluated before prescribing the diet. Depending on the site of the inflammation, fat malabsorption and lactose intolerance any necessitate additional dietary modifications.

Long-term use of a fiber- and/or residue-restricted diet generally is not recommended because it is associated with constipation, diverticular disease, and cancer of the colon and may actually aggravate symptoms during nonacute phases of disease. Patients are encouraged to resume a normal, more liberal diet when symptoms subside and during periods of remission. The patient with an ostomy may require a fiber- and residue-restricted diet postoperatively during the transition to a general diet.

ADEQUACY:

Depending on individual food choices, the diet is adequate in all nutrients based on the 1989 Recommended Dietary Allowances (RDA). However, the diet does not meet the RDA for iron in pregnant, lactating, and premenopausal women. Vitamin and mineral, supplementation may be indicated for these individuals or for those with suboptimal intakes and increased requirements resulting from illness. The potential risk and benefits of long-term restriction of dietary fiber should be addressed before using the diet for any extended period. Strict restrictions in vegetables and fruits may necessitate supplementation of ascorbic acid, folate, and others depending on actual intake. In persons with lactase deficiency who do not tolerate milk, calcium also may need to be supplemented. Individual response, particularly in the patient with ulcerative colitis and Crohn's disease, must be monitored to avoid an overly restrictive regimen and to determine continued indications for using the diet.

Table 2 outlines a sample menu.

TABLE 2**SAMPLE MENU FOR FIBER- AND RESTRICTED-RESIDUE DIET**

BREAKFAST	LUNCH	DINNER
Cranberry juice (1/2 cup)	Vegetable broth (1 cup)	Strained tomato juice (1/2 cup)
Puffed rice cereal (3/4 cup)	Saltine crackers (4)	Broiled skinless chicken breast (3 oz)
Canned peaches (1/2 cup)	Lean beef patty (3 oz)	White rice (1/2 cup)
White-bread toast (2 slices)	Hamburger bun without seeds (1)	Cooked spinach (1/2 cup)
Margarine (2 tsp)	Mustard (1 tbsp)	White roll(1)
Jelly (1 tbsp)	Ketchup (1 tbsp)	Margarine (2 tsp)
2% milk (1 cup)	Canned fruit cocktail (1/2 cup)	Low-fat frozen yogurt (1/2 cup)
Coffee/tea	Vanilla wafer cookies(2)	Applesauce (1/2 cup)
	2% milk (1 cup)	Coffee/tea
	Coffee/tea	

APPROXIMATE NUTRIENT ANALYSIS

Energy (keal)	1,929.70	Phosporus (mg)	1,349.50
Protein (g)	96.7	Potassium (mg)	3,454.70
(20.1% of keal)		Sodium (mg)	2,725.70
Carbohydrate (g)	274.4	Zinc (mg)	14.70
(56.9% of keal)		Vitamin A (µg RE)	2,013.80
Total fat (g)	51.9	Vitamin C (mg)	72.10
(24.2% of keal)		Thiamin (mg)	1.80
Saturated fatty acids (g)	17.7	Riboflavin (mg)	2.50
Monounsaturated fatty acids (g)	18.9	Niacin (mg)	28.80
Polyunsaturated fatty acids (g)	10.4	Folate (µg)	324.50
Cholesterol (mg)	171.6	Vitamin B-6 (mg)	2.30
Calcium (mg)	1,191.80	Vitamin B-12 (µg)	4.30
Iron (mg)	15.2	Dietary fiber 9g)	16.20
Magnesium (mg)	318.4	Water-insoluble fiber (g)	10.60

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