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CKD: A Guide to Higher Fiber Foods[1]

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Living with chronic kidney disease (CKD) presents many challenges, and diet is one of them. People with CKD may find it difficult to consume enough fiber-rich foods while following the other diet recommendations for CKD. As kidney function declines, individuals with CKD may be recommended to limit foods high in phosphorus and potassium. As some of the restricted foods may also be high in fiber, these restrictions may result in a diet lower in fiber.

National guidelines for fiber intake by individuals with CKD do not specifically address the amount of fiber that they should consume (Ikizler et al. 2020), but it is generally recommended that people with CKD consume a diet higher in fiber. The fiber recommendations for CKD may be similar to what is recommended for healthy individuals: 21 to 25 g of fiber per day for women and 30 to 38 g of fiber for men depending on age (Trumbo et al. 2002). On average, people with CKD consume only about 15 g of fiber per day (Evenepoel and Meijers 2012). However, it is possible to follow the dietary restrictions for the later stages of CKD and still consume the recommended amount of fiber. This guide will discuss the health benefits of fiber and provide some examples of fiber-rich foods that may be good choices for CKD.

Health Benefits of Fiber and CKD

Fiber is naturally found in all plant foods, including fruits, vegetables, grains, nuts, seeds, and legumes. Fiber, when isolated from plants, can also be added to foods to create higher fiber foods. Consuming adequate fiber maintains a healthy digestive tract and lowers the risk of developing heart disease, type 2 diabetes, and other chronic diseases (Dahl and Stewart 2015). Higher fiber intakes are also recommended for the management of many chronic diseases, as fiber helps lower cholesterol and control blood sugar. Fiber, particularly viscous fibers (e.g., psyllium and beta-glucans from oats and barley), may also be beneficial for the management of blood pressure (Khan et al. 2018).

Consuming the recommended amount of fiber may have several benefits for people with CKD. Higher fiber intakes are linked to improved survival (Veronese et al. 2018), as are healthy dietary patterns that provide fiber from fruit, vegetables, legumes, and whole grains (Kelly et al. 2016).

Adequate fiber, particularly insoluble fiber, may be helpful in promoting laxation (Salmean, Zello, and Dahl 2013), and thus preventing constipation in people with CKD. Diabetes is a leading cause of kidney failure. Consuming foods that contain fiber may help with blood glucose control (Post et al. 2012); higher intakes of fiber are associated with a lower risk of diabetes (Veronese et al. 2018). The higher risk of cardiovascular disease that comes with CKD may be lessened with fiber by lowering cholesterol and inflammation (Dahl et al. 2016).

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Increasing Fiber with CKD

In the early stages of CKD, when there are usually no restrictions of potassium, it is recommended to consume a variety of foods providing fiber, such as whole grains, legumes, fruits, vegetables, nuts, and seeds.

Many whole-grain foods and legumes are good sources of fiber but have traditionally been limited in the CKD diet due to their phosphorus content. Although plant foods such as whole grains contain a significant amount of phosphorus, they are healthful food choices for those with CKD. This is because only a fraction of the phosphorus from whole grains is absorbed into the body (Williams, Ronco, and Kotanko 2013). Table 1 provides a list of whole-grain foods.

Foods with added fiber can help to achieve fiber recommendations and may have beneficial health effects (Chiavaroli et al. 2014). Table 2 gives some examples of grain-based foods with added fiber. For more information on foods with added fiber, see https://edis.ifas.ufl.edu/pdffiles/FS/FS23500.pdf.

Fruits and vegetables are also important sources of fiber. Legumes, such as beans, peas, and lentils, are especially high in fiber, providing as much as 8 g of fiber per ½ cup serving. However, some people with CKD may need to restrict legumes and some fruits and vegetables due to their potassium content. For those people with CKD who have been advised to restrict potassium, there are lower potassium fruits and vegetables to choose from. Examples are listed in Table 3.

It is recommended that people with CKD consult with a registered dietitian nutritionist (RDN), preferably one who specializes in kidney disease, before changing their diet. A dietitian can help with choosing optimum food sources of fiber for each stage of CKD.

Resources

For more information about the phosphorus contents of select foods, visit the United States Department of Agriculture's website at https://www.nal.usda.gov/legacy/sites/default/files/phosphorus_0.pdf. This site provides an extensive index of all types of foods and their specific contents of phosphorous.

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Table 1. Fiber and nutrient contents of some whole-grain foods. (USDA n.d.).

Cereals	Serving Size	Fiber (g)	Potassium (mg)	Phosphorus (mg)	Sodium (mg)
Health Valley Fiber 7 Flakes	¾ cup	4.4	149	101	62
Health Valley Oat Bran Flakes	¾ cup	3.0	128	129	142
Kashi 7 Whole Grain Flakes	¾ cup	4.4	92	65	109
Kellogg's Mueslix	1 cup	5	200	N/A	150
Kellogg's All-bran Bran Buds	½ cup	17	430	N/A	300
Kellogg's Miniwheats Unfrosted	30 biscuits	7	250	175	0
Post® Shredded Wheat n' Bran	1 ⅓ cup	8	240	140	0
Post® Original Shredded Wheat	1 cup	7	220	140	10
Post® Grape Nuts	½ cup	7	230	140	270
Uncle Sam® Cereal	¾ cup	10	250	140	135
Weetabix Whole Grain	2 biscuits	4	150	N/A	130
Breads	**Serving Size***	**Fiber (g)**	**Potassium (mg)**	**Phosphorus (mg)**	**Sodium (mg)**
Cracked wheat	1 slice	1.6	50	43	153
Oatmeal	1 slice	1.1	46	36	127
Oat bran	1 slice	1.3	42	40	100
Pumpernickel	1 slice	1.8	59	50	169
Rice bran	1 slice	1.4	61	50	76
Sprouted wheat	1 slice	1.5	55	49	133
White wheat	1 slice	2.6	36	29	134
Whole wheat	1 slice	1.7	72	60	128
Crackers	**Serving Size**	**Fiber (g)**	**Potassium (mg)**	**Phosphorus (mg)**	**Sodium (mg)**
Triscuit® Crackers Hint of Salt	6 crackers	3	120 mg	80	50 mg
Ryvita® Original Crispbread	2 slices	3	N/A	N/A	58 mg

* Approximately one ounce (28 g); N/A = not available

Table 2. Fiber and nutrient content of some grain-based foods with added fiber. (USDA n.d.).

Grain-based foods with added fiber	Serving Size	Fiber (g)	Potassium (mg)	Phosphorus (mg)	Sodium (mg)
Arnold Flax & Fiber Sandwich Thins®	1 roll (57 g)	4	140	N/A	300
Barilla Pasta White Fiber, Shells	2 oz	6	N/A	N/A	0
Carb Balance Flour Tortillas	1 tortilla (42 g)	15	140	N/A	320
FiberOne® Original Bran cereal	½ cup	14	110	42	110
FiberOne® Italian Bread	1 slice	3	N/A	N/A	130
Great Value™ Whole Wheat Egg Noodles	1¼ cup	5	250	N/A	10
MM Mania Fiber Biscotti	1 oz	6	N/A	N/A	70
MM Mania Fiber Breadsticks	1 oz	11	N/A	N/A	140
Quaker Instant Oatmeal High Fiber, Maple Brown Sugar	1 pkt	10	110	130 mg	210
Weetabix Organic Crispy Flakes and Fiber Cereal	1¼ cup	11	310	N/A	320

Table 3. Fiber and nutrient contents of some lower potassium vegetables and fruits.* (USDA n.d.).

Vegetables	Serving Size	Fiber (g)	Potassium (mg)	Phosphorus (mg)	Sodium (mg)
Broccoli (raw, chopped)	½ cup	1.2	144	30	15
Cabbage (raw, chopped)	½ cup	1.1	76	12	8
Carrot (raw)	1 small	1.4	160	18	34
Cauliflower (raw, chopped)	½ cup	1.1	160	24	16
Celery (raw, stalk)	1 medium	0.6	104	10	32
Corn (kernels, cooked)	½ cup	2.1	198	72	2
Cucumber (raw, peeled, chopped,)	½ cup	0.5	90	14	1
Eggplant (peeled, cubed, cooked)	½ cup	1.2	61	7	0
Green beans (cooked)	½ cup	2.0	91	18	1
Green Pepper (chopped, raw)	½ cup	1.3	130	15	2
Radish (raw, sliced)	½ cup	0.9	135	12	23
Zucchini (raw, with peel, chopped)	½ cup	0.6	162	24	5
Fruit	**Serving Size**	**Fiber (g)**	**Potassium (mg)**	**Phosphorus (mg)**	**Sodium (mg)**
Apple	1 small	3.6	159	16	1
Blueberries	½ cup	1.8	57	9	1
Blackberries	½ cup	3.8	117	16	1
Cherries (sweet, with pits)	½ cup	1.4	153	14	0
Grapefruit (raw, pink and red)	½ whole	1.4	156	11	0
Grapes (red or green)	15	0.7	140	15	1
Pear with skin	1 small	4.6	172	18	1
Pineapple (chunks)	½ cup	1.2	90	7	1
Plum with skin	1 medium	0.9	104	11	0
Raspberries	½ cup	4.0	93	18	1
Tangerine	1 small	1.4	126	15	2
Strawberries (whole)	½ cup	1.4	110	17	1

* Approximately one ounce (28 g); N/A = not available