Going

Think twice if you have kidney di

By **Lauren Antle and Jessianna Saville**, R.D., Owner of kidneygrub.com

By now I am sure you've been to the grocery store and seen a special aisle for all things gluten-free. From gluten-free cookies to gluten-free bread, this label has taken over the supermarket shelves. The gluten-free market explosion begs the questions, "Is gluten free better?" In the minds of consumers, adding the word "-free" to products (for example sugar-free or fat-free) often implies the product is healthier, but this is not always the case, especially for an individual with kidney disease.

So, what is gluten? Gluten is a naturally occurring protein found in wheat, barley, and rye that acts similar to glue in that it helps food maintain its shape (1). Gluten can be found in a variety of foods from bread and pastas to chicken broths and soy sauce (1). Although gluten-free products have been marketed to all consumers, there are very few people who actually need to follow a gluten-free regimen. In fact, the gluten-free diet is currently only indicated for 5 specific medical conditions: celiac disease, wheat allergy, gluten

disease

sensitivity, irritable bowel syndrome, and autism (2). Chronic Kidney Disease (CKD) did not make the list of medical conditions that require this special diet. This is due to the fact that CKD alone does not use the gluten-free diet for its nutrition therapy. Current research shows the main nutrition therapy goals for patients with CKD are to control intakes of protein, sodium, potassium, and phosphorus to varying degrees based on renal failure stage and current treatment. In fact, some gluten-free items may actually be contraindicated in the renal diet because of higher levels of sodium, potassium, and, for diabetic-renal patients, its sugar content.

Gluten-free products are made by swapping out wheat, barley, and rye containing ingredients and exchanging it for an alternative grain that is naturally gluten-free, such as rice, almond, and tapioca flour to name a few. Unfortunately, the nutritional composition of these substitutes varies greatly from all-purpose wheat flour. For example, let us take a look at the nutritional content of wheat flour versus a common alternative in gluten-free cooking. One-fourth cup of all-purpose wheat flour contains 33.75 mg of phosphorus and 33.44 mg of potassium, whereas one-fourth cup of almond flour contains 131.96 mg phosphorus and 204 mg of potassium. Although the idea of switching flours is to make food comparable, it is important to note that the nutritional content can vary. Some gluten-free grains are comparable while others are not.

To compare gluten-free products in terms of the renal diet, let us look at the nutritional makeup of common products. One Thomas'™ Original English muffin contains 210 mg of sodium, whereas a gluten-free English muffin from Glutino™ contains 440 mgs of sodium. The amount of sodium is more than doubled in the gluten-free product compared the wheat flour product. A similar conclusion is made when looking at frozen waffles. A serving of Kellogg's™ Cinnamon Toast Waffles contains 270 mgs sodium, whereas a serving of Kashi™ Gluten Free Cinnamon Waffles contains 482 mg of sodium. This same trend is noticeable in other gluten-free products as well (see table below).

PRODUCT	SODIUM CONTENT (MG)
Nature's Own™ Light Honey Wheat Bread (1 slice)	125
Rudi's Gluten-Free Bakery™ Sandwich Bread (1 slice)	190
Chips Ahoy! ™ Original Chocolate Chip Cookies (1 serving = 3 cookies)	110
Tate's Bake Shop™ Gluten Free Chocolate Chip Cookies (1 serving = 2 cookies)	135

Sodium is one of the only nutrients that, if reduced, can help prevent further progression of CKD (3) and, therefore, this nutrient is very important to look at when reading nutrition labels. If you are not suffering from a condition that requires the gluten-free diet, there is no reason to consume the additional sodium when you could have the same product that tastes better and is better for your kidneys.

Although the gluten-free diet can be helpful for those suffering celiac disease or gluten sensitivity, eating more of these products may increase consumption of sodium, which can further progress renal function loss or contribute to difficulty controlling fluids for dialysis patients. As someone with CKD, it is important to take all measures possible to delay progression and prevent/treat complications (3). The gluten-free diet does not aim to accomplish these goals and could end up further damaging the kidneys if caution is not taken while consuming these products.

For individuals with kidney disease needing a gluten-free diet, or for those interested in cutting gluten out of their diet there are some things you can do. First, watch your labels closely for potassium and sodium content of food. If diabetic, be especially careful of carbohydrate content as some gluten-free products have a large amount of added sugars. Some gluten-free products can be good choices for kidney patients such as Bob's Red Mill™ Pancake Mix (x mg K_+, x mg Sodium). Other great products could be unsalted rice crackers (ex: Edward and Sons™ Brown Rice Snaps). Watch out for products made with large amounts of oat flour, oat bran, and/or almond flour. A gluten-free kidney

diet would have rice and corn as its base carbohydrate with meals, with moderate amounts of whole oats. For example, it could include Rice Krispies or Corn Chex for breakfast with rice milk, corn tortillas (without phosphorus additive) with meat and vegetables for lunch, and rice with fish plus your favorite low potassium vegetable for dinner. Another less known grain you could use would be millet.

In conclusion, following a gluten-free diet is do-able with renal failure patients with proper attention paid to ingredients. Reading the ingredients is very helpful to know which alternative grains the product is using and gives a better understanding of the nutrition content. As stated before, products made with large amounts of grains that are higher in potassium, phosphorus, and sodium should be limited. Potassium and sodium are on most nutrition facts and will aid in finding products that are appropriate for the renal diet. The table below will be helpful to grow your knowledge base on the common ingredients. The gluten-free diet is not part of the nutrition therapy for CKD patients; however, if you suffer from a condition that requires a gluten-free diet, the two can absolutely co-exist with some caution and research.

Alternative Grain (1/4 cup)	Calories	Protein (g)	Phosphorus (mg)	Potassium (mg)	Sodium (mg)
White Flour	113	3	33.75	33.4	0.63
Whole Wheat Flour	102	4	107	108	0.6
Wheat Bran	57.75	4	147	133	1
Brown Rice Flour	143	3	133	114	3.16
White Rice Flour	145	2.35	38.71	30.02	0
Almond Flour	160	5.84	131.96	204	2.99
Potato Starch Flour	160	0	N/A	25	0
Potato Flour	143	2.76	67.2	400	22
Tapioca Flour	85	0	0	2.5	0
Cornstarch	122	0.08	4.16	0.96	2.88
Xanthan Gum	120	0	0	0	800
Sorghum Flour	109	2.55	84.1	98.01	0.91
Oat Bran	57	4.07	172.49	133.01	0.94
Oat Flour	113	4	123	108	1.8
Millet	189	5.5	142.5	97.5	2.5

Products	Calories	Protein (g)	Phosphorus (mg)	Potassium (mg)	Sodium (mg)
Ezekiel™ Low Sodium Bread (1 slice)	80	4	79.9	80	75
Rudi's™ GF Original Sandwich Bread	110	<1	12.58	31.28	190
Chips Ahoy! ™ Original (3 Cookies)	160	2	25	45	110
Tate's GF ™ Chocolate Chip Cookies (2)	140	1	N/A	N/A	135
Glutino™ GF English Muffins (1 muffin)	170	4	N/A	N/A	440
Bob's Red Mill™ GF Baking Flour	130	2	19.77	23.82	10
Kashi™ GF Cinnamon Waffles (2 waffles)	160	3	N/A	40	270
Kellogg's™ Cinnamon Toast Waffle (3 waffles)	300	5	254	70	482
Stauffer's™ Animal Crackers	126	2	21	28	115
Simple Truth™ GF Animal Crackers	120	2	N/A	0	70

References

1. Biesiekierski, J. R. (2017). *What is Gluten?. Journal of Gastroenterology and Hepatology,* 32(S1), 78-81.
2. Pietzak, M. (2012). *Celiac Disease, Wheat Allergy, and Gluten Sensitivity When Gluten Free Is Not a Fad*. Journal of Parenteral and Enteral Nutrition, 36(1 suppl), 68S-75S.
3. Jones-Burton, C., Mishra, S. I., Fink, J. C., Brown, J., Gossa, W., Bakris, G. L., & Weir, M. R. (2006). *An In-depth Review of the Evidence Linking Dietary Salt Intake and Progression of Chronic Kidney Disease*. American Journal of Nephrology, 26(3), 268-275.