Kidney Nutrition Guide

Nutrition plays an important role in supporting kidney health, especially for those who have been diagnosed with compromised kidney function, from early-stage chronic kidney disease (CKD) to end-stage kidney disease (ESKD) when dialysis or kidney transplant may be warranted. Orgain® offers nutrition solutions that may support individuals with all stages of kidney disease manage their condition. In addition to this guide, you may want to reference our Orgain® Renal-Friendly product guide for more detailed product information.

People have two kidneys located behind the abdomen that perform various crucial functions. These include filtering blood, regulating red blood cell (RBC) production, waste removal, body fluid balance, active vitamin D production, and managing blood pressure and pH levels.[1,2] Serious complications arise when the kidneys do not work properly. Risk factors for kidney disease include poorly controlled diabetes, hypertension, being overweight, smoking, and physical inactivity. Consuming a high sodium diet that is low in fruits and vegetables can also contribute to the development of kidney disease.[3] Furthermore, diets high in animal protein and low in plant protein can promote a higher dietary acid load (DAL) which is associated with a higher risk of kidney failure.[4] Socioeconomic factors play a role as well; chronic kidney disease is more likely in individuals with lower income, lower access to healthcare, and limited access to healthy foods.[3,5]

Chronic Kidney Disease

Chronic kidney disease (CKD) is defined as abnormalities of kidney structure or function that are present for at least three months and have deleterious health complications.[6] CKD is diagnosed using a blood test called the glomerular filtration rate (GFR) that shows how well the kidneys are filtering blood as well as testing the urine for albumin which is a protein that passes into urine when the kidneys are damaged.[7] Kidneys that are damaged cannot filter blood appropriately.[8] The damage occurs slowly causing waste buildup, including creatinine and urea, in the blood. As the kidneys lose their ability to concentrate urine, excess minerals, such as phosphorus, potassium, and acid, are retained in the body.[8] These physiological changes cause many symptoms including edema (fluid retention), tiredness, itchy skin, muscle cramps, loss of appetite, and headache, among other symptoms.[9]

Many people in the United States suffer from kidney disease; in fact, CKD affects 15% of the adult population.[11] CKD is diagnosed based upon the GFR, classified as stages 1 through 5, where 5 is the most severe.[11]

Chronic Kidney Disease continued

Nutritional considerations for people with CKD are in place to preserve a patient's remaining kidney function and to treat disease-related complications.[12] For those with earlier stages of CKD, consuming a healthy, nutrient-dense diet is encouraged. In early-stage chronic kidney disease (CKD), there may be less need for strict limits on fluids and nutrients like potassium, phosphorus, protein, and sodium. However, some patients might benefit from reducing these nutrients. For such individuals, a plant-based diet could be beneficial. This is due to their lower micronutrient bioavailability and protein content compared to animal-based foods, and positive effects on body alkalinity, hypertension, gut microbiota, and fiber content, which can all decrease uremic toxins and potentially slow CKD progression.[4,13] Individuals with CKD frequently exhibit reduced vitamin D levels, as the kidney plays a crucial role in producing active vitamin D. Consequently, a decline in vitamin D levels often results in decreased blood calcium levels, given that vitamin D assists in calcium absorption. This often leads to secondary hyperparathyroidism as the body attempts to normalize calcium levels. Therefore, some patients may require supplemental vitamin D to maintain bone health.[6]

Orgain® offers several great tasting, plant-based products that may support individuals with CKD.

Nutritional Attributes* (Click on product images to learn more about each product.)	 **Orgain® Organic Protein™ & Superfoods Plant-Based Powder**	 **Orgain® Organic Protein™ Plant-Based Powder**	 **Orgain® Organic Nutrition™ Plant Protein Shake**	 **Orgain® Protein™ Snack Bar**
Phosphorus Per Serving	1mg	2mg	100mg	5mg
Potassium Per Serving	120mg	80mg	120mg	0mg
Sodium Per Serving	300mg	190mg	260mg	125mg
Protein Per Serving	21g	21g	16g	10g
Certified Plant-Based	✔	✔	✔	✔

*Nutritional values subject to change and may vary by flavor. Visit https://orgain.com/collections/products for full nutritional information per product.

"Orgain provides a variety of flavorful, clean, plant-based products that are easy to use for my patients who face multiple problems affecting their nutritional status that is compounded by kidney disease. Plant-based nutrition provides a protective edge in halting the progression of kidney disease, making Orgain my first choice for my patients. As a dietitian working with chronic kidney disease for over 25 years, I seek a company that is credible, trustworthy and is an authority in nutrition advancements and Orgain provides the partnership and service I respect and value!"

- Annamarie Rodriguez, Renal Dietitian

End Stage Kidney Disease (ESKD) & Dialysis

The most advanced stages of CKD encompass end stage kidney disease (ESKD), affects around 800,000 people in the US.[11] Of those with ESKD, 71% are on dialysis, and 29% are living with a kidney transplant.[11] ESKD is diagnosed when a patient's kidneys have lost 85-90% of their ability to function.[6] Dialysis is typically warranted for patients with ESKD, which is an artificial blood filtration procedure done on a regular basis, usually multiple times per week.[8] There are two types of dialysis: hemodialysis and peritoneal dialysis. Hemodialysis involves removing blood from the body and using an artificial kidney to filter it (i.e., remove excess waste and fluid) before returning it to the body. Peritoneal dialysis, on the other hand, first involves a surgical procedure to implant a peritoneal catheter. The catheter then filters blood through the peritoneum membrane in the abdomen and allows waste products to be discarded from the body. In the US, approximately 90% of dialysis patients receive hemodialysis and 10% receive peritoneal dialysis.[11]

Nutritional considerations for patients with ESKD are intended to preserve a patient's residual kidney function and treat disease-related complications, including but not limited to anemia, hyperkalemia, hyperphosphatemia, and high blood pressure.[6] Additionally, people with chronic kidney disease are also at higher risk for protein energy wasting (PEW) which is characterized by loss of muscle and fat mass as well as cachexia.[14] Individuals with ESKD tend to also have a higher incidence of diabetes, hypertension, heart failure, stroke, and coronary heart disease compared to the general population. Adopting dietary patterns that favor plant-based foods and limit saturated and trans fats could help slow the progression of cardiovascular disease in this high-risk group.[13] Many plants also contain health-promoting, heart-healthy nutrients like fiber and phytonutrients and are associated with promotion of weight management, as well as management of hypertension, and type 2 diabetes.[4,13]

Individuals with ESKD may necessitate monitoring of several macro- and micronutrients. For some people, vitamin D supplementation may be indicated due to compromised vitamin D and calcium status, and related risk of hyperparathyroidism, secondary to the loss of kidney function.[6] Dialysis can remove proteins from the blood and also results in some blood loss with each treatment thus patients receiving dialysis treatments typically require additional protein (1.0 – 1.2 g/kg) and extra iron to maintain stable protein and iron status, necessary in maintaining RBCs, respectively.[15–17] People with ESKD are often recommended to limit minerals such as potassium, phosphorus, and sodium in the diet due to reduced ability to excrete these nutrients in the urine. Consuming a plant-based diet may also help to achieve lower phosphorus levels, given that phosphorus in plant foods is in the form of phytate and is largely indigestible as humans lack the digestive enzyme phytase to remove the phosphate from the phytate molecule. Thus phosphorus from plant-based foods has a lower in bioavailability than phosphorus in animal-based foods.[4,13]

Orgain® offers several great tasting, plant-based products that may be helpful to meet the nutritional needs of individuals with ESKD.

> "I have a patient that has to go to work after dialysis and I recommend trying liquid calories rather than fast foods or high sodium snacks. I provided patient with a sample Orgain plant-based shake, and the patient said he was able tolerate it and it tasted good."
> **- Aldair, Registered Dietitian**

Nutritional Attributes* (Click on product images to learn more about each product.)	 **Orgain® Organic Protein™ & Superfoods Plant-Based Powder**	 **Orgain® Organic Protein™ Plant-Based Powder**	 **Orgain® Organic Nutrition™ Plant Protein Shake**	 **Orgain® Protein™ Snack Bar**
Phosphorus Per Serving	1mg	2mg	100mg	5mg
Potassium Per Serving	120mg	80mg	120mg	0mg
Sodium Per Serving	300mg	190mg	260mg	125mg
Vitamin D Per Serving			6.5mcg	
Protein Per Serving	21g	21g	16g	10g
Certified Plant-Based	✔	✔	✔	✔

*Nutritional values subject to change and may vary by flavor. Visit https://orgain.com/collections/products for full nutritional information per product.

Kidney Transplant

Receiving a kidney transplant may be indicated for patients with ESKD.[12] Nutritional consideration for patients who have received a kidney transplant are crucial to preserve the health of the transplanted organ, and the health of the patient, both acutely and long-term. Additional phosphorus is sometimes required to avoid hypophosphatemia, a common side effect of long-term steroid use which is often recommended for post-transplant patients.[18] It is also necessary to continue to monitor serum potassium in kidney transplant patients who may still be predisposed to hyperkalemia due to impaired kidney function and to minimize potassium intake, if blood levels begin to rise.[18] Consuming a diet lower in sodium is also recommended in order to control fluid retention and blood pressure.[6,19] Patients who have received a kidney transplant are also advised to consume adequate protein and calories to support recovery from surgery.[19] Long-term steroid use in kidney transplant patients can have adverse effects on bone health, therefore increased vitamin D is often recommended.[18] Iron deficiency and related anemia are also common among kidney transplant patients due to lower iron stores and intraoperative blood loss. Increased iron intake may be helpful to optimize iron status in individuals who have received a kidney transplant.[18]

Orgain® offers several great tasting, plant-based products that may support the nutritional needs of individuals who have received a kidney transplant.

Nutritional Attributes* (Click on product images to learn more about each product.)	 **Orgain® Organic Protein™ & Superfoods Plant-Based Powder**	 **Orgain® Organic Protein™ Plant-Based Powder**	 **Orgain® Organic Nutrition™ Plant Protein Shake**	 **Orgain® Kids Plant Protein™ Nutritional Shake**	 **Orgain® Protein™ Snack Bar**
Calories Per Serving	150kcal	140kcal	230kcal	200kcal	150kcal
Phosphorus Per Serving	1mg	2mg	100mg	140mg	5mg
Potassium Per Serving	120mg	80mg	120mg	90mg	0mg
Sodium Per Serving	300mg	190mg	260mg	190mg	125mg
Vitamin D Per Serving			6.5mcg	5mcg	
Protein Per Serving	21g	21g	16g	8g	10g
Certified Plant-Based	✔	✔	✔	✔	✔

*Nutritional values subject to change and may vary by flavor. Visit https://orgain.com/collections/products for full nutritional information per product.

"As a Renal Dietitian, I recommend Orgain Organic Protein Plant-Based Protein Powder; it is low in phosphorus and potassium while still providing adequate protein. As a meal replacement or as a coffee creamer, I recommend Orgain Organic All-In-One Nutritional shakes that are also renal friendly. And finally, for my patients that struggle with fluid restrictions, I recommend Orgain Organic Protein Snack bars. These snacks bars are my go-to recommendation for boosting protein because they taste so great!"

- Heather, Renal Registered Dietitian

Orgain HEALTHCARE

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Disclaimer: This guide is for informational purposes only and is not intended to be medical advice. The material presented in this guide, and displayed on the associated webpage(s), is not intended to be a substitute for professional medical advice, diagnosis, or treatment. Always seek the advice of your physician or other qualified healthcare provider with any questions you may have regarding a medical condition or treatment and before undertaking a new nutrition and/or health regimen.

The Orgain® products featured in this guide are those suggested by Orgain® and/or those used most commonly amongst clinicians for individuals in this specific population.

Testimonials in this guide are created from unpaid Orgain® Healthcare Ambassadors.

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