

Nutritional Considerations for Dialysis Vegetarian Patients, Part Two



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THIS IS THE second piece of a 2-part series on educating practitioners and patients on how to successfully follow a vegetarian diet while on dialysis. The first piece focused on education for the practitioner. This summary and handout will provide education tips for use with the vegetarian dialysis patient.

Individualization should be strongly considered when educating any of our patients. Choosing to be a vegetarian is a personal choice and may be for religious choices, cultural beliefs, economic reasons, or for overall health. If you have a vegetarian patient that wishes to continue with this type of diet, then an animal-based diet should not be encouraged for these clients. With adequate nutrition counseling, diet planning, and knowledge of kidney friendly vegetarian foods and portion sizes, following a vegetarian diet while on dialysis can be successfully accomplished. Education for the vegetarian dialysis patient should focus on vegetarian protein sources, phosphorus bioavailability, nutrition label reading, appropriate portion sizes, and food preparation and cooking methods.

A common concern for vegetarian plant-based diets with chronic kidney disease (CKD) is increased levels of serum potassium and phosphorus due to a higher concentration of these nutrients in plant-based proteins and whole grains. Despite increased content of these nutrients in vegetarian food sources, they may not be as big of a concern as originally thought. In the Chronic Renal Insufficiency Cohort Study by Scialla et al., which looked at the percentage of dietary intake of plant protein and metabolic parameters in 2,938 individuals with CKD, they found that plant protein-based diets were not associated with higher levels of serum phosphorus or potassium in CKD patients.¹ Many studies have also shown that the type of dietary phosphorus can play a role in actual absorption.²⁻⁴ Therefore,

it is necessary to educate patients on the origin of dietary phosphorus because of differences in absorption rates. The bioavailability of phosphorus from plant sources is less than that of animal products due to the presence of phytates.² It has been estimated that 30–50% of phosphorus is absorbed from plant sources, whereas 70–80% is absorbed from animal products.^{3,4} Phosphorus additives have the highest absorption rate, which is estimated to be around 90%.³ Clients should be educated on identifying potassium and phosphorus additives on nutrition labels to limit overall intake. Multiple studies have shown that educating patients to avoid phosphorus additives helped to improve serum phosphorus levels.^{5,6} Both animal- and vegetarian-based products can contain phosphorus additives, which can contribute a significant amount of phosphorus in the diet. A study by Leon et al., looked at popular grocery items and their phosphorus content, which was measured by laboratory analysis. It was found that regularly purchased food items containing phosphorus additives could add an additional 736 mg of phosphorus per day compared with similar products that did not contain these additives.⁷ With the recommendation for dialysis patients to consume 800–1000 mg of phosphorus per day, this goal is difficult to meet when consuming a diet that is high in phosphorus additives. Plant protein sources may be beneficial to include in the diet due to decreased phosphorus absorption; however, education on reading nutrition labels to avoid phosphorus additives should be emphasized.

When looking at vegetarian protein sources, nutrient composition is of importance. Most protein sources, animal or plant based, often contain potassium and phosphorus. Being familiar with appropriate vegetarian protein-rich food sources and their potassium and phosphorus content is important for both renal dietitians and patients. Some plant sources are very similar in nutrient composition compared with animal products. For example, a 3-ounce serving of chicken breast supplies 102 calories, 19 g of protein, 284 mg of potassium, and 181 mg of phosphorus and a 1-cup serving of tofu contains 151 calories, 18 g of protein, 298 mg of potassium, and 228 mg of phosphorus.⁸ Both are similar in protein content. The potassium content of the tofu is slightly higher by 14 mg, and phosphorus content is 47 mg higher. Of note, the phosphorus in the vegetarian source will be less absorbed due to the presence of phytates.

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In addition to education on reading nutrition labels to identify potassium and phosphorus additives, education should be provided on recommended portion sizes, food preparation, and cooking methods. According to data from the United States Department of Agriculture Nutrient Database, rinsing and draining canned products such as canned beans can help to lower potassium content. A half-cup serving of undrained and unrinsed canned kidney beans contains 333 mg of potassium, whereas a half-cup serving of drained and rinsed canned kidney beans contains 198 mg of potassium.⁸ Cooking techniques can also be discussed with patients to help limit potassium intake. Preparing vegetables by boiling has been shown to decrease overall potassium content due to potassium being leached into the cooking water. A study by Burrowes et al., looked at different cooking methods of root vegetables and found that double boiling root vegetables helped to remove the greatest amount of potassium. The leaching method, where vegetables are placed in water for varying amounts of time (2 hours, 4 hours, and 8 hours) before being cooked resulted in insignificant loss of potassium.⁹ The double boil method consists of using a 2:1 water to sample ratio and is brought to a boil, drained, and then new room temperature water is added. Vegetables are cooked until tender. Providing patients with education on cooking and preparation methods can be another useful tool to help keep potassium intake within the recommended range for dialysis patients.

The renal diet can be very intimidating to clients with CKD. Protein, phosphorus, potassium, fluid, and sodium recommendations in addition to other comorbidity diet considerations make nutrition recommendations overwhelming and challenging for the patient. As renal di-

eticians, it is our job to make dietary suggestions that are clear, concise, attainable, and in line with dietary preferences and plan of care. The following handouts are aimed at providing vegetarian patients with the tools they need to achieve adequate nutrition for dialysis while meeting protein, potassium, and phosphorus goals.

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