

Kidney-Friendly Protein Choices



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Increasing Protein in the Kidney Diet

GUIDELINES FOR THE nutrition management of adult chronic kidney disease consider the estimated nutrition needs of a renal patient in addition to presence of protein catabolism, nutrient loss, and widely ranging disease severity.¹ Specifically, the renal diet aims to regulate intake of calories, protein, phosphate, potassium, sodium, and fluid to promote optimal renal function and maintenance of adequate nutrition status. Renal patients whom are not receiving dialysis treatment reflect positive nitrogen balance with a suggested daily energy intake of 30–35 kcal/kg depending on age and protein consumption of 0.6–0.75 g/kg.² The most recent National Kidney Foundation Kidney Disease Outcomes Quality Initiative (KDOQI) publication recommends that individuals receiving dialysis consume 30–35 kcal/kg calories. For individuals on hemodialysis, protein recommendations are 1.2 g/kg per day. Similarly, individuals receiving peritoneal dialysis should consume at least 1.3 g protein/kg a day; unless, they are able to maintain nutritional status at 1.2 g protein/kg per day. The KDOQI report also notes that protein intake should be at least 50% from high biological sources.²

Protein recommendations to meet daily nutritional needs are heavily dependent on an individual's disease state and dietary habits.¹ The presence of proteinuria should be a consideration of individualized protein recommendations. Proteinuria loss exceeding 1 g/per day indicates the need for nutrition intervention.³ A study exploring the dietary protein intake of 126 older adults with declining kidney function found these patients to be at increased nutritional risk when dietary protein intake fell below estimated daily needs.⁴ Protein catabolism manifested by renal disease places patients at

increased risk of inadequate dietary protein. The occurrence of protein catabolism is compounded by scarcity of high protein dietary sources within the renal diet due to dietary restrictions. Diet recommendations should consider individualized patient needs and inflammatory status to decrease risk of inadequate protein intake resulting in malnutrition and adverse clinical outcomes.⁴ Both extended length of hospital stay and increased mortality rates have been demonstrated in malnourished patients, which further emphasizes the need for adequate nutrition therapy support to prevent negative outcomes associated with restricted oral intake.¹

The extensive restrictions recommended to renal patients may result in limited dietary intake of calories, protein, and additional nutrients. Adhering to recommended restrictions while simultaneously ensuring adequate, quality protein sources to patients can be a challenge. Meat and dairy products are complete dietary protein sources that are natural sources of phosphorus. Such items should be limited, although not excluded, to promote high-quality protein intake and adherence to dietary restrictions. A recent study conducted on low protein diets in nondialysis kidney disease patients suggests 50% protein intake from complete protein sources such as dairy and animal sources and 50% intake from vegetarian sources.⁵ This approach allows for optimal protein intake to prevent catabolism while preserving kidney function in early phases of chronic kidney disease.

It should also be noted that protein source plays a role in the regulation of phosphate levels. In a small, crossover study, an increased ratio of vegetarian derived protein sources was found to improve serum phosphorus levels. This research may be useful for those with more strict phosphorus regimens.⁶ Renal patients on a phosphorus regulated diet, as recommended to preserve kidney function, should be educated on phosphorus restriction in addition to methods of maintaining adequate protein intake from high-quality sources. Informing patients of low phosphorus, protein containing food options can improve dietary protein intake and prevent the occurrence of malnourishment.

The following handout on protein choices for the renal patient was created with the goal of providing simple education material that can help identify different types of animal and plant protein choices. Specific protein goals from each of the sources should be individualized.

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References

1. Cano N, Fiaccadori E, Tesinsky P, et al. ESPEN guidelines on enteral nutrition: Adult renal failure. *Clin Nutr.* 2006;25:295-310.
2. National Kidney Foundation, KDOQI clinical practice guidelines for nutrition in chronic renal failure. Available at: http://www2.kidney.org/professionals/kdoqi/guidelines_nutrition/doqi_nut.html. Accessed July 19, 2017.
3. Cano N, Aparicio M, Brunori G, et al. ESPEN guidelines on parenteral Nutrition: Adult renal failure. *Clin Nutr.* 2009;28:401-414.
4. Kiuchi A, Ohashi Y, Tai R, et al. Association between low dietary protein intake and geriatric nutrition risk index in patients with chronic kidney disease: A retrospective single-center cohort study. *Nutrients.* 2016;8:662.
5. Kalantar-Zadeh K, Moore L, Tortorici A, et al. North American experience with low protein diet for on-dialysis-dependent chronic kidney disease. *BMC Nephrol.* 2016;17:19.
6. Moe S, Zidehsarai M, Chambers M, et al. Vegetarian compared with meat dietary protein source and phosphorus homeostasis in chronic kidney disease. *Clin J Am Soc Nephrol.* 2011;2:257-264.

Kidney Friendly Protein Choices

- Protein provides necessary nutrients to repair damage in the body from disease.
- With kidney failure, the body breaks down protein more quickly. This means you will need to eat foods with protein to replace what is being lost to preserve muscle mass.
- Discuss with your doctor and dietitian the correct amount of protein you need to maintain your health.
- Try to meet your recommended protein goal daily.
- Animal and plant sources are both good quality protein options.
- Examples of nutrient dense protein foods that can be part of your kidney friendly diet are listed below.



Animal Sources

Animal sources provide protein, but naturally contain phosphorus. Limit these items to half of your daily protein intake. Each animal protein choice listed is approximately one serving.

- Meat
 - 1 ounce pork, beef, chicken, turkey, or fish
- Dairy
 - ½ cup milk or yogurt
 - 1 ounce cheese
- 1 Egg



Plant Sources

Eat a variety of plant based foods throughout the day to meet half of your daily protein goal. While plant sources contain potassium and phosphorus, they can be included as part of your kidney diet. Each option identified is approximately one serving.

- ½ cup beans, peas or lentils
- Soy
 - ½ cup soy milk or yogurt
 - 1 ounce soy cheese
- 1 ounce tofu
- Nuts/Seeds
 - ¼ cup raw nuts or 2 tablespoons nut butter