



## Low-phosphorus diet: Best for kidney disease?

### Why is a low-phosphorus diet useful in managing kidney disease? What foods contain phosphorus?

Answers from Erik P. Castle, M.D.

Calcium and phosphorus, which are minerals, help build strong bones. Healthy kidneys help regulate the level of phosphorus in your blood by removing extra phosphorus. If your kidneys aren't working properly, eventually you'll probably have high phosphorus levels in your blood (hyperphosphatemia). Too much phosphorus decreases the level of calcium in your blood, which can lead to bone disease.

Your phosphorus needs may vary, depending on your kidney function. For adults with kidney disease, generally 800 to 1,000 milligrams (mg) of phosphorus a day is the limit. Many healthy adults eat almost double this amount.

Nearly every food contains some phosphorus. As a general rule, foods high in protein are also high in phosphorus. If you have an earlier stage of kidney disease, you'll likely be advised to limit your intake of phosphorus and protein. A reduced-protein diet helps limit the amount of waste that builds up in your blood.

If you have late stage kidney disease and you're on dialysis, the picture changes a bit. Dialysis removes protein (in the form of waste) from your blood, so your protein needs increase — but you'll still need to choose lower phosphorus foods. A registered dietitian can help you choose protein-rich foods that are lower in phosphorus.

Below is a partial listing of foods lower in phosphorus to help you identify substitutes for higher phosphorus foods. Although a food or drink may be low in phosphorus, you still need to watch portion sizes and limit the number of servings you eat or drink each day.

**Instead of these higher phosphorus**

**Choose these lower phosphorus**

<b>foods:</b>	<b>foods:</b>
Milk, pudding or yogurt (from animals and from many soy varieties)	Rice milk (unfortified), nondairy creamer (if it doesn't have terms in the ingredients list that contain the letters "phos")
Hard cheeses, ricotta or cottage cheese, fat-free cream cheese	Regular and low-fat cream cheese
Ice cream or frozen yogurt	Sherbet or frozen fruit pops
Soups made with higher phosphorus ingredients (milk, dried peas, beans, lentils)	Soups made with lower phosphorus ingredients (broth- or water-based with other lower phosphorus ingredients)
Whole grains, including whole-grain breads, crackers, cereal, rice and pasta	Refined grains, including white bread, crackers, cereals, rice and pasta
Quick breads, biscuits, combread, muffins, pancakes or waffles	Homemade refined (white) dinner rolls, bagels or English muffins
Dried peas (split, black-eyed), beans (black, garbanzo, lima, kidney, navy, pinto) or lentils	Green peas (canned, frozen), green beans or wax beans
Organ meats, walleye, pollock or sardines	Lean beef, pork, lamb, poultry or other fish
Nuts and seeds	Popcorn
Peanut butter and other nut butters	Jam, jelly or honey
Chocolate, including chocolate drinks	Carob (chocolate-flavored) candy, hard candy or gumdrops
Colas and pepper-type sodas, flavored waters, bottled teas (if a term in the ingredients list contains the letters "phos")	Lemon-lime soda, ginger ale or root beer, plain water

Manufacturers may add phosphorus when processing foods to thicken, improve taste or

prevent discoloration. Check the ingredients to see if phosphorus has been added. If so, choose a similar food item that doesn't have such additives.

Dozens of additives contain phosphorus. Look for any ingredient that contains "phos" in the term. Here are some examples:

- Calcium phosphate
- Disodium phosphate
- Phosphoric acid
- Tricalcium phosphate
- Monopotassium phosphate
- Pyrophosphate polyphosphates

Food manufacturers often don't list the amount of phosphorus on food labels. In addition, fast foods and convenience foods have potentially large amounts of phosphorus, which may be used as a preservative, among other things.

For help creating a meal plan that meets your needs, consult a registered dietitian. A dietitian can help make sure that you get enough nutrition while following your doctor's medical recommendations. Confirm all recommended food substitutes with your dietitian.

Because it's difficult to lower phosphorus in your diet, your doctor may recommend a phosphate binder medication to help control the amount of phosphorus your body absorbs from foods. Your doctor may also recommend calcium and other supplements, depending on your nutritional needs. Ask your pharmacist to check your medications and supplements for phosphorus.

With

**Erik P. Castle, M.D.**

## References

1. Chronic kidney disease evidence-based nutrition practice guidelines. Chicago, Ill.: American Dietetic Association. <http://guidelines.gov/content.aspx?id=23924>. Accessed Sept. 12, 2012.
2. Taal MW, et al. Brenner & Rector's The Kidney. 9th ed. Philadelphia, Pa.: Saunders Elsevier; 2011. <http://www.mdconsult.com/books/about.do?about=true&eid=4-u1.0-B978-1-4160-6193-9..C2010-1-67932-1-TOP&isbn=978-1-4160-6193-9&uniqlid=321553651-265>. Accessed Sept. 13, 2012.
3. Phosphorus and your CKD diet. National Kidney Foundation. <http://www.kidney.org/atoz/content/phosphorus.cfm>. Accessed Sept. 13, 2012.

4. Phosphorus, P (mg) content of selected foods per common measure, sorted by nutrient content. USDA National Nutrient Database for Standard Reference, Release 24.  
<https://www.ars.usda.gov/SP2UserFiles/Place/12354500/Data/SR24/nutrlist/sr24w305.pdf>. Accessed Sept. 13, 2012.
5. Managing the hidden PHOSphorus in foods: Beneficial across all stages of kidney disease. American Association of Kidney Patients. <http://www.aakp.org/aakp-library/Hidden-Phosphorus/>. Accessed Sept. 20, 2012.
6. What we eat in America, NHANES 2005-2006. U.S. Department of Agriculture.  
[http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/0506/usual\\_nutrient\\_intake\\_vitD\\_ca\\_phos\\_mg\\_2005-06.pdf](http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/0506/usual_nutrient_intake_vitD_ca_phos_mg_2005-06.pdf). Accessed Sept. 13, 2012.
7. Gonyea JE (expert opinion). Mayo Clinic, Rochester, Minn. Sept. 26, 2012.
8. Nelson JK (expert opinion). Mayo Clinic, Rochester, Minn. Sept. 21, 2012.
9. Shurnaker TM (expert opinion). Mayo Clinic, Rochester, Minn. Oct. 18, 2012.
10. Nutrition and chronic kidney disease (Stages 1-4): Are you getting what you need? National Kidney Foundation.  
[http://www.kidney.org/atoz/pdf/NutriKidFail\\_Stage1-4.pdf](http://www.kidney.org/atoz/pdf/NutriKidFail_Stage1-4.pdf). Accessed Oct. 18, 2012.

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