



Phosphorus (phosphate) and chronic kidney disease

Phosphorus is a mineral which helps keep your bones strong and healthy. As kidney function declines, your blood phosphate level may rise, causing itchy skin or painful joints, and loss of calcium from your bones. You may need to limit the amount of high and moderate phosphorus foods you eat. These include milk, cheese and other milk products, and protein-rich foods such as meat, fish and poultry. However, you still need some milk products and protein foods for overall good nutrition, so your registered dietitian will make sure you have enough of these in your daily eating plan.

See the "Phosphorus Guidelines for Choosing Foods" on the next page.

Phosphate additives and label reading

Phosphorus is often added to foods to enhance flavour and to act as a preservative. Most processed meats and many beverages, especially colas, contain added phosphates. The amount of phosphorus a food contains does not legally need to be included on the Nutrition Facts Panel of packaged goods, so even if it is not listed as a nutrient, the food may still contain phosphorus. Look instead at the list of ingredients for "hidden" sources of phosphorus such as **phosphoric acid** and **sodium phosphate**. The word "seasoned" on meat may also indicate the presence of phosphate additives.

Medications to control phosphate level

Your doctor may prescribe *phosphate binders*. These medications act like a sponge to soak up the phosphorus in your foods. For phosphate binders to work properly, you must always take them with food: they are best taken in the *middle* of your meal or snack. Do not take phosphate binders at the same time as iron supplements.

What is a safe level of phosphate in my blood?

A normal blood phosphate level for adults is 0.8-1.45 mmol/L but *your* target level may be different. Speak to your nephrologist or your dietitian about this.

What can I eat?

In general, you should limit milk and dairy products such as yogurt, ice cream and puddings to a total daily maximum of ½ cup to 1 cup. Meat and protein foods also contain phosphorus but they are an essential part of your diet. Choose fresh, unprocessed foods more often. Your registered dietitian will give you a protein recommendation based on your body size, your nutritional needs and your stage of kidney failure.

Important: If you are vegetarian, speak to a registered dietitian about how you can still meet your protein needs.

Note: The food lists below show examples of foods to choose and to avoid. The lists below are a guide and are not all-inclusive.

Phosphorus guidelines for choosing foods	
Instead of these higher phosphorus foods...	...you can eat these lower phosphorus foods
Dairy and dairy-substitutes	
1 cup (8 ounces) milk	1/2 cup (4 ounces) milk
1/2 cup ice cream	Sherbet (sorbet), popsicle, regular frozen dessert topping
Processed cheese spread	1/4 cup low sodium cottage cheese or cream cheese
Processed cheese	Cheese: cheddar, mozzarella or Swiss – limit to 1 oz. (size of thumb) every second day
Yogurt	Jello, applesauce
Malted milk (Eg: Ovaltine)	Tea, hot apple cider
Soy beverages	Beverages made with unfortified rice beverage or unfortified almond beverage without phosphate additives
Breads, grains and cereals	
Bran cereal, granola	Non-bran cereal, shredded wheat, rice cereals, corn flakes, cream of wheat or cream of rice
Brown rice	White rice, barley, couscous, bulgar
Tea Biscuits: store-bought, mixes and refrigerated	Tea Biscuits: homemade (use baking powder substitute below**)
Bread: whole grain, 100 percent whole wheat, multi-grain, dark rye	Bread: white, 60 percent whole wheat, cracked wheat, light rye or sourdough
Pancakes and waffles: commercial, mixes and frozen	Pancakes and waffles: homemade (use baking powder substitute below**)
Muffins: all store-bought, mixes, and homemade bran and oat bran flavours	Muffins: homemade, made with white flour (use baking powder substitute below**)
Meat and other proteins	
Carp, crayfish, beef liver, chicken liver, fish roe, organ meats, oysters, sardines, bones from canned fish	Fish

Phosphorus guidelines for choosing foods

Instead of these higher phosphorus foods...	...you can eat these lower phosphorus foods
"Seasoned" meats containing phosphate additives, processed meats	Unseasoned beef, chicken, pork, turkey, veal, eggs
Fruits and vegetables	
Lima or pinto beans, legumes, lentils, edamame	Mixed vegetables or green beans
Dried fruits, prunes, prune juice	Fresh or canned fruits such as apples, pears, berries, grapes, watermelon, pineapple
Beverages	
Cola soft drinks	Non-cola soft drinks (ginger ale, lemon/lime flavoured soda, root beer)
Alcohol: beer, stout, ale	Alcohol: gin, vodka, whiskey, wine (note: use alcohol only as advised by your doctor)
Fresh or frozen juices with added calcium	Lemonade (with no added phosphates)
Iced tea with phosphate additives	Homemade iced tea
Cocoa, hot chocolate	Tea, hot apple cider
Snacks and miscellaneous items	
Nuts, sesame or sunflower seeds; avoid pumpkin seeds	Unsalted popcorn, unsalted pretzels, unsalted corn chips
Chocolate bars	Hard candy, fruit flavoured candy or jelly beans
Chocolate hazelnut spread, nut butters, tahini	Jam*, jelly* and honey*
*These items are high in sugar. Limit or avoid if you have diabetes unless you are treating a low blood sugar.	
**Since baking powder is high in phosphorus, try this low phosphorus alternative: use ¼ tsp baking soda + ½ tsp cream of tartar <i>instead of</i> 1 tsp baking powder	

For information and tools to help you manage your kidney-friendly diet, visit www.kidneycommunitykitchen.ca

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No one associated with The Kidney Foundation of Canada will answer medical questions via e-mail. Please consult a healthcare professional for specific treatment recommendations.