



Managing phosphate intake: a guide for young people

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Why do I need to reduce my phosphate intake?

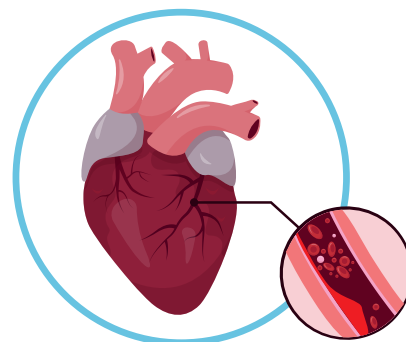
Phosphate is a mineral that is important for the development of strong bones and teeth. Our kidneys control the level of phosphate in the body by getting rid of any excess in the urine. When your kidneys are not working properly, the phosphate in your blood may increase.

What are the effects of high blood phosphate levels?



Short term

Red sore eyes, itchy skin and bone pain



Long term

Weak bones, poor growth and hardening of blood vessels, which can damage the heart

Which foods are high in phosphate?

There are two types of phosphate in our food and drinks:

- *Phosphate additives* which are added to some foods during their processing to help keep the food moist, improve its texture or color, or to extend its shelf life.
- Phosphate which occurs *naturally* in foods such as meat, milk, eggs, beans and nuts.

Limiting dietary phosphate intake from food additives and reducing some naturally occurring sources can help prevent high blood phosphate levels and protect your bones and heart.

Are all phosphates equal?

The amount of phosphate you absorb from food varies depending on the source.

The phosphate in additives can be completely absorbed by your body. This is a concern as this can quickly cause your blood phosphate to rise. You can reduce your intake of these additives by eating fewer processed foods.

The phosphate that is found naturally in foods is less well absorbed (see table below). As these foods provide essential protein, vitamins, minerals and fiber they are an important part of your diet. However, it may be necessary to reduce certain natural sources such as meat, milk, eggs, beans and nuts.

The naturally occurring phosphate in plant-based foods, such as beans and nuts, is less well absorbed than that from meat or fish so try to replace some animal-based foods with plant-based foods.

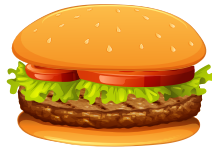
Source	Examples of foods	How much phosphate do we absorb into our body?
Phosphate additives	Processed meat and chicken, plant-based 'fake' meat and burgers, frozen fish products, processed cheese products, cake and pancake mixes, dark colored soft drinks (such as colas)	Up to 100%
Naturally occurring animal-based phosphate	Milk and dairy products (e.g. cheese, yogurt, ice cream), eggs, meat, fish	40-60%
Naturally occurring plant-based phosphate	Beans, lentils, soya, tofu, quinoa, nuts	20-40%

Stepwise guide to reducing phosphate intake

Step 1.

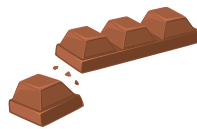
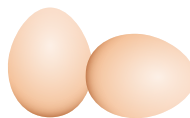
Limit phosphate additives

Choose fresh foods rather than processed foods



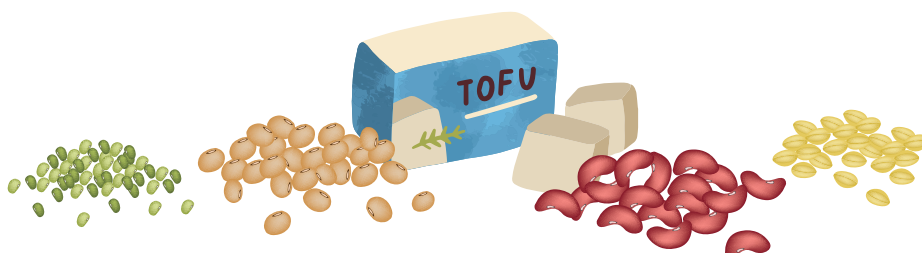
Step 2.

Reduce intake of some foods naturally high in animal-based phosphate



Step 3.

Replace some of the naturally occurring animal-based phosphate foods with plant-based foods



Step 1.

Limit phosphate additives

Preparing more foods from fresh at home

Processed foods are the main source of phosphate additives in the diet. Cooking more foods at home using fresh ingredients is encouraged.

What type of foods contain phosphate additives?

The following table shows foods which may contain phosphate additives; their presence may be related to the brand.

Fresh meat and poultry	Fresh, raw meat and poultry could contain enhancers which include phosphate additives (see page 7 for further details)
Processed meat and poultry	Processed meat and poultry e.g. sausages, burgers, breaded products (such as chicken nuggets)
Fish	Frozen processed fish and breaded fish products (such as fish fingers)
Processed plant-based meat alternatives	Vegeburgers, vegetarian sausages, 'fake' meat
Bakery items	Cakes, biscuits, crumpets, flour tortilla wraps, naan bread
Dairy	Dried milk products, milk desserts and yogurts, evaporated milk, cream, ice cream, sterilized and ultra-high temperature (UHT) milk, processed cheese (especially sliced or spreadable products)
Potato products	Chilled, dried and frozen products such as chips and waffles
Powdered food	Packet sauces, instant dessert mixes e.g. pancake mixes
Drinks	Dark colored fizzy drinks. Chocolate drinks or malt-based drinks

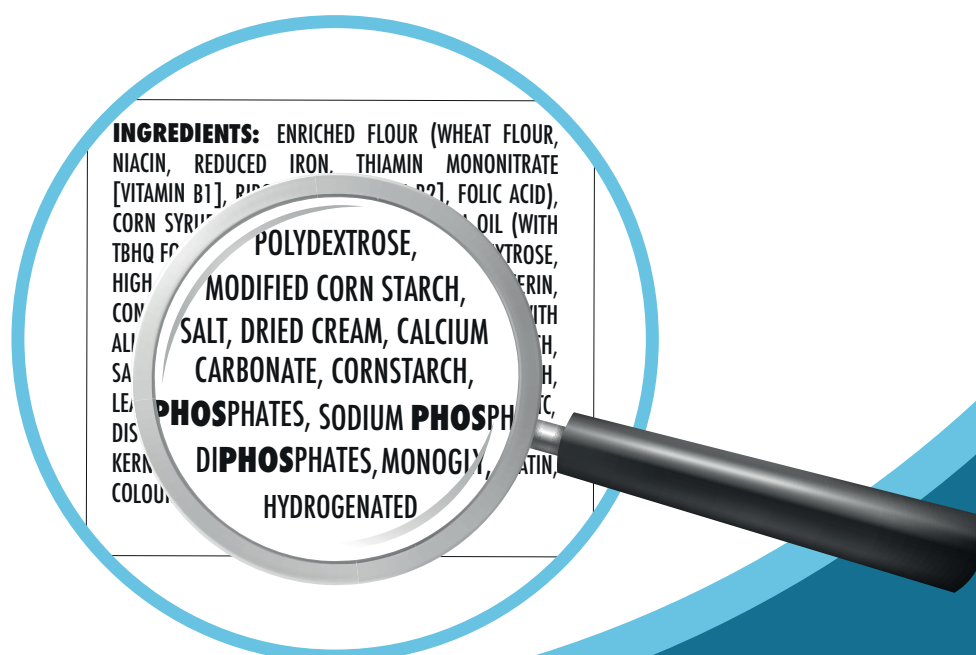
How can I tell if phosphate additives are present?

Not all food labels will tell you if an item contains phosphate additives. Some are listed by name or as an E-number (see table below).

Phosphate additives

E338	Phosphoric acid	E450	Diphosphates
E339	Sodium phosphates	E451	Triphosphates
E340	Potassium phosphates	E452	Polyphosphates
E341	Calcium phosphates	E541	Sodium aluminium phosphates
E343	Magnesium phosphates		

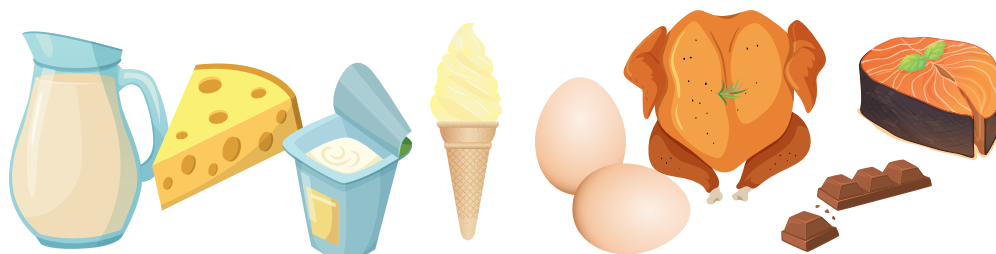
You can check ingredient lists for these, or look for 'phos' as part of an ingredient name. These foods should be limited, or suitable alternatives found. In general, ready to eat, processed and 'fast food' are more likely to contain phosphate additives compared to fresh foods.



Step 2.

Reduce intake of some foods naturally high in phosphate




You may need to have smaller portions of some natural phosphate foods. These include milk and milk products (e.g. cheese, yogurt, ice cream), eggs, meat and fish. See pages 11-12 for a guide to choosing foods which are lower in phosphate.



The following foods contain similar amounts of naturally occurring phosphate - your dietitian will advise you on how much you can have each day

The number of portions allowed may change depending on your blood results

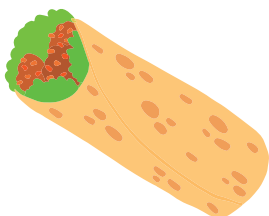
Portions

	1 egg		150g crème fraîche
	100ml milk		1/2 pot natural yogurt (60g)
	80ml cheese sauce (5 tablespoons)		1 pot custard or rice pudding (125g)
	1 thin slice or 1 heaped table-spoon cheddar cheese (20g)		2 scoops ice cream (120g)
	1 small portion camembert or brie (30g)		1 small chocolate covered biscuit bar (50g)
	1 pot fromage frais (85g) or fruit yogurt (120g) or soya yogurt (120g)		1/2 mini pizza (50g)

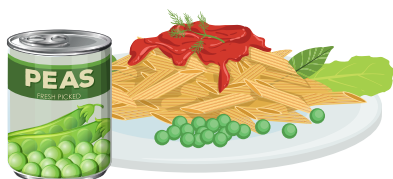
Step 3.

Eat more plant-based foods

Plant-based foods provide important vitamins, minerals and fiber and the phosphate in these foods is less well absorbed. Here are some ideas to increase the plant-based foods in your diet:



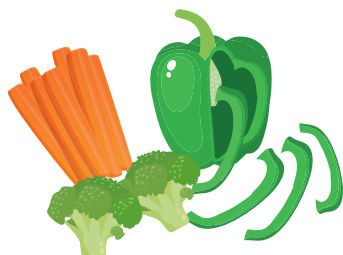
Replace some of the meat in Bolognese sauce, chilli con carne, burgers and burritos with lentils or beans



Add extra fresh, frozen or canned vegetables to pasta sauces, curries and stews and cut down on the amount of meat, chicken or fish



Reduce the amount of meat, fish, eggs or cheese in your sandwich filling and replace with hummus or mashed avocado; add some salad items such as cucumber or lettuce



Pack some raw vegetables into your lunch box, or have as a snack e.g. carrots, bell peppers, broccoli or cauliflower



Have a side salad with your meals e.g. bulgar wheat, quinoa, couscous or rice with added seeds, nuts, celery, radishes, spring onions or sweetcorn



Use of phosphate binders

You may be given phosphate binder medication to take with your meals and snacks. This will reduce how much phosphate you absorb from your food.



Here are some practical tips about taking phosphate binders

It is important that you take your phosphate binder with meals and snacks and not between meals.

Remember to take your phosphate binder with all snacks which contain phosphate.

Some foods such as vegetables, fruit and cereal products (e.g. rice, pasta, bread, wraps, crackers, breadsticks, twists, biscuits, cakes) may be low in phosphate, so if they are not eaten at the same time as a high phosphate food, you may not need to take a phosphate binder. However, check food labels for possible inclusion of phosphate additives.

If you are having nasogastric or gastrostomy feeds, you may be able to mix your phosphate binders into your feed.

Some phosphate binders may cause feed ingredients to settle out. In this case you need to mix them with some water and put them down your tube at the beginning and/or end of your feeding period.

You may just prefer to take your phosphate binders by mouth before and/or after your feeding period. Discuss this with your dietitian or doctor.

The dose of phosphate binder should be tailored to the amount of phosphate in your diet, including both food and drinks. Your doctor or dietitian will advise you about this.



How to choose foods lower in phosphate

The following table provides suggestions for alternatives to food and drinks high in phosphate additives and high in naturally occurring phosphate.

Step 1.

Limit phosphate additives

Step 2.

Reduce intake of some foods naturally high in phosphate

Step 3.

Eat more plant-based foods and choose lower phosphate alternatives

	High in phosphate ADDITIVES	High in NATURAL phosphate	Lower phosphate alternatives
Milks	Ultra-high temperature (UHT) milk products Non-dairy creamer Plant-based milks containing a phosphate additive	Cow's milk - whole and semi-skimmed, condensed and powdered milk	Dilute cow's milk with water (50:50) Milk substitutes, including some plant-based milks such as oat milk and almond milk
Dairy	Processed cheese slices/strips/cheese spread	Hard cheese e.g. cheddar, edam Yogurt Ice cream	Cottage, cream or ricotta cheese Plant-based cheeses Vegan, coconut or soya oil cheese Cream, soured cream Jelly, sorbet, fruit lollies
Bakery	Baked goods or puddings with phosphate-containing raising agents e.g. crumpets, muffins, scones, pastries, naan bread and tortillas/wraps Baked savoury foods e.g. meat pastries, cheese bread, pizza	Foods containing chocolate	Baked goods without phosphate-containing raising agents* e.g. croissants, English muffins and hot cross buns Plain or jam/cream-filled biscuits, plain cakes, teacakes, cream cakes and doughnuts Cream crackers, wholemeal or white bread, pitta bread, chapattis, rice cakes
Starchy foods	Frozen, chilled and dried potato products e.g. potato waffles, potato cakes	Macaroni cheese, cheese on toast, cheesy fries	Fresh potatoes, homemade chips, wedges, roast potatoes Rice, couscous, pasta, quinoa
Breakfast cereals	Check the label for phosphate-containing additives	Cereals containing chocolate	Porridge oats, rice-based and wheat-based cereals
Dry product mixes	Cake, biscuit, pancake and dessert mixes Packet sauces Instant pasta or noodle dishes	Sauces made up with milk	Pasta, rice, noodles with homemade sauces/flavourings

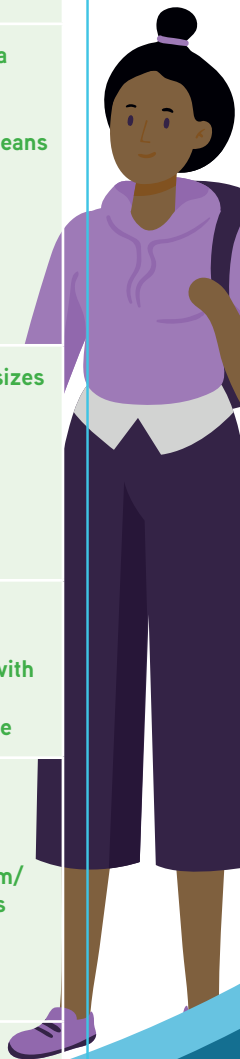
* A phosphate free raising agent can be made using cream of tartar and sodium bicarbonate in place of baking powder. This may not be suitable if you are also restricting potassium intake.

Step 1.

Step 2.

Step 3.

	High in phosphate ADDITIVES	High in NATURAL phosphate	Lower phosphate alternatives
Meat	<p>Frozen beef burgers or takeaway foods</p> <p>Processed chicken e.g. chicken nuggets and popcorn chicken</p> <p>Sausages, bacon, ham, salami</p> <p>Tinned meats, meat paste, pâté</p>	<p>Fresh or frozen meats e.g. chicken, turkey, pork, beef and lamb</p> <p>Check meats from the supermarket for phosphate additives</p>	<p>Try to reduce meat portion sizes</p> <p>Sausages made in a butcher's shop</p> <p>Homemade beef burgers and meatballs</p>
Plant-based protein	<p>Some processed plant-based meals/products e.g. meat-free country pie, meat-free hot dogs, chicken-free crispy grills</p>	<p>Portion sizes may need to be reduced</p> <p>Nuts e.g. almonds, hazelnuts, peanuts, walnuts</p> <p>Seeds e.g. pumpkin, sesame, sunflower, tahini paste</p>	<p>Tofu, Quorn®, textured soya protein, soya or pea-based veggie burger, beans and pulses e.g. lentils, kidney beans and chickpeas</p>
Fish and shellfish	<p>Processed fish products e.g. fish fingers/cakes, battered or crumbed fish</p> <p>Fish paste</p>	<p>Fresh or frozen fish e.g. cod, haddock, salmon and tuna</p> <p>Tinned fish: salmon, tuna, mackerel, sardines, pilchards (only if without bones and without skin)</p>	<p>Try to reduce fish portion sizes</p>
Eggs	<p>Some baked egg products e.g. quiche</p>	<p>Egg yolks</p>	<p>Egg whites</p> <p>To make scrambled eggs (with 2 eggs) replace one of the whole eggs with 1 egg white</p>
Spreads & dips	<p>Processed cheese spreads</p> <p>Processed dips</p>	<p>Nut butters and chocolate spread</p>	<p>Biscuit spread, jam, marmalade, syrup, honey</p> <p>Small amount of sour cream/salsa/pureed vegetable dips</p> <p>Hummus, guacamole and refried beans</p>
Drinks	<p>Dark colored fizzy drinks e.g. colas*</p> <p>Chocolate or malt-based drinks</p>	<p>Cow's milk</p>	<p>Light colored fizzy drinks e.g. lemonade</p> <p>Water, diluted fruit squash, cordials and some natural fruit juices</p> <p>Coffee*, tea*, herbal and fruit teas</p>



*Children under the age of 12 years should not have caffeine-containing drinks



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