

A Hidden Reason Your Arteries, Kidneys, and Bones May Age Too Fast

Analysis by [Dr. Joseph Mercola](#)

October 28, 2026

STORY AT-A-GLANCE

- Modern diets hide excessive phosphate additives in ultraprocessed foods, which are absorbed rapidly and efficiently and can disrupt natural mineral balance
- Industrial phosphate additives enhance texture, flavor, and shelf life, and in one study, meals built from additive-containing foods supplied about 40% more phosphorus than the same meals made without additives
- Research links chronically high phosphate to arterial calcification, kidney strain, higher blood pressure, and faster aging, and in the general population, risk rises even when blood phosphate stays within the normal range
- Elevated phosphate can trigger excess fibroblast growth factor-23 (FGF-23), which has been linked to heart and blood vessel problems, while a high phosphate-to-calcium balance may weaken bones over time
- Avoiding ultraprocessed foods and choosing whole, natural ingredients lowers phosphate load and may help support healthy mineral balance and long-term cardiovascular, kidney, and bone health

Most people have learned, one way or another, to be cautious about [refined sugar](#). They know it drives insulin resistance, weight gain, inflammation, and fatty liver disease. They also know fructose is especially dangerous when separated from the fiber and nutrients found in whole fruit. Refined sugar has become a known villain because it's obvious and measurable and tied to cravings we recognize immediately.

But the modern diet contains something far more elusive, a compound that quietly weaves itself through the food supply and affects the body in deeper, more systemic ways than people realize. That compound is phosphate — specifically, the industrial phosphate additives added to processed foods.

The challenge is that added phosphate doesn't register in the mind the way sugar does. It doesn't taste sweet, spike cravings, or create the obvious sensation of "I probably shouldn't be eating this."

And because manufacturers aren't required to list the amount of inorganic phosphate, only the ingredient name, consumers never know how much phosphate they're ingesting. They also don't know how it behaves once it enters the bloodstream, or how dramatically it differs from the natural phosphorus found in real whole foods.

How Processing Changed the Way Humans Encounter Phosphorus

For most of human history, dietary phosphorus arrived through traditional foods like meat, fish, eggs, dairy, nuts, seeds, and plants. In these forms, phosphorus is absorbed incompletely.¹ Plant sources often bind it in phytate, which humans don't digest efficiently. As a result, your body only absorbs around 60% of the phosphate found in real, whole foods.²

- **Animal foods contain bioavailable phosphorus** — However, the presence of fat, protein, and other minerals slows the rate at which it appears in the bloodstream. This slow, steady pattern mirrors the body's natural design and allows the kidneys, bones, and hormones to maintain equilibrium without effort.
- **The industrial food system changed the phosphorus dynamic almost overnight** — Manufacturers discovered that phosphate additives were incredibly useful for preserving moisture, improving texture, adjusting acidity, stabilizing mixtures, and

extending shelf life.³ They added them to a wide range of best-selling groceries, including prepared frozen foods, dry food mixes, packaged meats, breads, soups, and yogurts,⁴ and colas rely on phosphoric acid for their tangy flavor.⁵

In fact, research shows that if you eat a diet that's mainly comprised of foods with phosphorus additives, your phosphorus intake can be about 736 milligrams a day higher — a 41% increase — than the same meals made from additive-free foods.⁶

- **Total phosphate intakes now often run two to three times above dietary requirements⁷** — Added phosphate is also hidden, dissolves rapidly, and is absorbed far more efficiently than natural phosphorus — estimates range from about 70% to more than 80%.^{8,9} This speed and efficiency of absorption may strain the regulatory systems designed to maintain mineral balance.

What Excess Phosphate Does to Your Arteries

The blood vessels are one of the first places phosphate begins to exert its effects. Research in people with chronic kidney disease shows that when phosphate levels stay high, the arteries can respond by absorbing calcium into their walls, forming microscopic deposits that grow over time. This process is called vascular calcification, and it turns soft, flexible blood vessels into stiffer, more rigid tubes.¹⁰

- **Your heart may suffer as a result** — It may need to work harder to push blood through stiffened vessels, which can raise blood pressure and cardiovascular risk long before a person notices anything is wrong.

According to a 2024 review, higher serum phosphate levels are consistently associated with increased risk of death and cardiovascular disease — not only in people with kidney disease but also in the general population, even within the normal range — and with more coronary artery calcification.¹¹

- **Testing for phosphate levels can be hard** — The most troubling part is that these changes can occur even when phosphate levels remain within the "normal" range on a blood test. Standard reference ranges may not capture the subtle long-term effects of chronic overload. As explained in one study, diagnosis remains to be a complicated matter due to the presence of various hormones, minerals, and cofactors that influence serum phosphate levels.¹²
- **Excess phosphate may speed up aging** — A diet high in phosphate additives may contribute to faster aging without tripping a diagnostic alarm, which is why phosphate overload is easy to miss.

How does high phosphate intake cause advanced aging? While there's no solid evidence yet, researchers theorize that it creates cytotoxic effects in multiple organs. In addition, apoptosis is triggered, causing unwanted cell death, which accelerates aging.¹³ In mice genetically prone to very high phosphate, lowering phosphate reversed many signs of premature aging, and a high-phosphate diet brought them back.

The Hidden Burden on the Kidneys

Your kidneys are your body's primary phosphate regulators. Their job is to remove excess phosphate from the blood and maintain stable levels throughout the day through a complex interaction with other organs such as your intestines, bones, and several endocrine factors.¹⁴ But kidneys evolved under conditions in which phosphorus arrived slowly, bundled inside complex foods. The sudden, repeated surges created by phosphate additives may place a burden on them.

- **Excess phosphate may strain kidneys over time** — In people with chronic kidney disease, high phosphorus levels may directly harm the kidneys and speed the loss of kidney function.¹⁵ Even healthy kidneys may struggle to keep up with a constantly high phosphate load. A 2022 review notes that clearing large amounts of phosphate can lead to tiny calcium phosphate particles forming inside the kidney, which may trigger inflammation and, over time, a decline in kidney function.¹⁶

- **The damage slowly creeps up on you** — Phosphate overload may be an under-recognized kidney stressor in the modern diet, although mainstream groups like the American Kidney Fund still describe high blood phosphorus mainly as a symptom of kidney disease rather than a cause.¹⁷

And because the early stages of kidney dysfunction are nearly impossible to feel,¹⁸ many people don't realize the connection between their food choices and their kidney health until they are already experiencing measurable decline.

- **Colas have been linked to kidney risk** — In one case-control study, drinking two or more colas a day was associated with about twice the risk of chronic kidney disease, and the authors reported similar results for artificially sweetened colas.¹⁹

A Hormonal Disturbance Few People Have Heard Of

When phosphate rises beyond what the kidneys can eliminate easily, the bones step in by releasing a hormone called fibroblast growth factor-23 (FGF-23).²⁰ Its purpose is protective — it tells the kidneys to excrete more phosphate and helps prevent dangerously high levels from circulating in the blood.²¹

- **When FGF-23 stays chronically elevated, it may become harmful in its own right** — Research links high FGF-23 to left ventricular hypertrophy, vascular dysfunction, and disordered mineral metabolism.²² It's also been associated with other conditions, such as end-stage kidney disease, cardiovascular mortality, and all-cause mortality.²³

What makes this finding important is that FGF-23 appears to respond to phosphate additives. How strongly dietary phosphate drives FGF-23 in humans varies from study to study.²⁴ However, in a small feeding study of 10 healthy adults, switching from additive-free foods to the same foods with phosphate additives for one week raised FGF-23 by 23%.²⁵ Researchers view this rise as a sign that the body is working to keep up with a higher mineral load.

- **Testing for FGF-23 isn't mainstream** — Most doctors never test for FGF-23, and most patients never hear the term. Researchers consider it a promising biomarker, mainly in kidney disease, though it's rarely measured in routine practice.²⁶

The Surprising Impact on Bone Health

People often associate phosphate with bone strength because of its role in bone formation, but the relationship becomes distorted when intake is excessive. Bones rely on a careful balance between calcium and phosphate, and when phosphate intake rises too high relative to calcium, hormones that pull minerals from the skeleton can rise. This imbalance can contribute to lower bone density and a greater risk of fractures over time.²⁷

- **Soda consumption has been linked to weaker bones** — A meta-analysis found that sugar-sweetened beverages, including carbonated drinks like cola, were associated with lower bone mineral density in adults, including women.²⁸ The authors noted that phosphoric acid, acidity, caffeine, and added sugar may each play a role.²⁹ Over decades, this cumulative stress may weaken the skeleton in ways people rarely associate with their beverage choices.

Colas sit at the center of the phosphate problem not just because of sugar, but because of their phosphate content. The tangy, biting flavor people recognize comes directly from phosphoric acid, one of the most absorbable forms available.

A 12-ounce cola contains a modest amount of phosphorus — roughly 25 to 60 milligrams — but in a highly absorbable form. (For comparison, U.S. adults average about 1,200 to 1,600 milligrams a day from food.)³⁰ And because sodas are consumed quickly and often without food, the impact may be more pronounced.

- **This creates a perfect storm** — Diet soda removes the sugar but leaves the phosphoric acid fully intact. Many people who avoid sugar may still be getting a steady dose of highly absorbable phosphate.

Why This Problem Is So Invisible

One reason phosphate overload has gone unnoticed for so long is that it doesn't trigger immediate symptoms. There is no energy crash, no digestive discomfort, no jittery feeling.³¹ Unlike sugar or caffeine, you can't feel phosphate as it enters your bloodstream. Any effects may only show up years later, in measures like blood pressure, kidney function, or arterial [calcification](#).

- **Phosphate is rarely listed on food labels** — Nutrition facts panels almost never list the amount of phosphorus or phosphate in a product. The only clues appear in the ingredient list as chemicals with the term "phos-" in their names.

Some foods contain five or six different phosphate additives, each contributing to the overall load. Most consumers have no idea how to interpret these words, and many assume they are harmless because they appear in foods marketed as healthy or low-fat. As noted in one study:³²

"The USDA [United States Department of Agriculture] Branded Foods Products Database (BFPD) contains label information about food and beverage content for foods sold in the U.S. Picard et al. reported that of the 3,466 foods in the BFPD, 52% contained inorganic and organic phosphate additives, but only a small fraction listed phosphate content on the label."

- **Inorganic phosphate is hidden everywhere** — Even people who avoid junk food often consume phosphate through items like flavored yogurts, nut milks, deli meats, vegan cheeses, and protein powders. The modern food system has found a way to slip phosphate into nearly every category, and the cumulative effect is what may matter most over time.

The Path Back to Balance

Reducing phosphate overload doesn't require elaborate strategies or precise counting. It simply requires shifting more of the diet toward real, whole foods and away from products whose ingredient lists sound like chemistry sets.

- **Dietary suggestions** — Look for organic fresh meats, ideally grass fed beef, bison, or lamb, instead of injected or marinated meats. Other changes you can make include choosing raw, grass fed whole dairy instead of processed cheeses or creamers, and water or tea instead of sodas. In the video above, bioenergetics expert Georgi Dinkov provides some recommendations, specifically when it comes to choosing cuts of meat.
- **Your body can respond quickly** — In the feeding study above, FGF-23 rose within a single week of eating foods with phosphate additives,³³ which suggests mineral-regulating hormones respond quickly to what you eat. Shifting away from ultraprocessed food, especially sodas, moves your body closer to the mineral environment it was designed to thrive in.
- **Understanding phosphate isn't about fear** — Ultimately, it's about awareness. Once people know where it hides and how it behaves, they naturally begin choosing foods that support long-term health rather than undermine it.

The Final Word on Phosphate

Phosphate overload may be one of the least-discussed contributors to premature aging in the modern diet. Unlike sugar, which people can taste and measure and resist, phosphate sneaks in through everyday foods people never think to question. Research links it to stiffer arteries, kidney strain, hormone disruption, weaker bones and higher blood pressure — all developing quietly, without obvious symptoms.

Once you recognize this, your relationship with food changes. You start noticing the patterns. You start seeing the "phos" ingredients for what they are. And you gain the ability to protect your long-term health.

Frequently Asked Questions (FAQs) About Phosphate on Bone Health

Q: What makes phosphate additives more harmful than natural phosphorus found in whole foods?

A: Industrial phosphate additives are absorbed far more completely and rapidly, unlike natural phosphorus from meats, plants, or dairy, which is digested slowly. This rapid absorption may strain the body's natural mineral regulation systems over time.

Q: How does excess phosphate affect the heart and arteries?

A: Chronic phosphate overload can contribute to calcium deposits in artery walls (vascular calcification), stiffening blood vessels and potentially raising blood pressure. Research links higher blood phosphate, even within the normal range, to increased risk of cardiovascular disease and death.

Q: In what ways does phosphate harm the kidneys and bones?

A: Phosphate surges may strain the kidneys, and in people with chronic kidney disease, high phosphorus may speed the loss of kidney function. High phosphate also disrupts calcium balance, and heavy soda intake has been linked to lower bone density.

Q: Why is phosphate overload so hard to detect?

A: Phosphate doesn't produce immediate symptoms and isn't fully measured on standard nutrition labels or blood tests. Most ultraprocessed foods and drinks contain hidden phosphate under ingredients with "phos" in their names.

Q: How can people reduce phosphate intake and protect their health?

A: Choose whole, unprocessed foods — fresh meats, raw whole dairy, and water or tea instead of sodas. Reducing phosphate-rich processed foods lowers your phosphate load and may help support healthy blood pressure, kidney health, and mineral balance.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified health care provider before making changes to your health regimen.

Sources and References

- ^{1, 8, 30} [NIH, Phosphorus](#)
- ^{2, 9} [Semin Nephrol. 2013 Mar;33\(2\):180–190](#)
- ^{3, 5, 7, 28, 32} [Nutrients. 2023 Aug 9;15\(16\):3510](#)
- ^{4, 6} [J Ren Nutr. 2013 Feb 8;23\(4\):265–270.e2](#)
- ¹⁰ [Circ Res. 2011 Sep 2;109\(6\):697-711](#)
- ¹¹ [Arterioscler Thromb Vasc Biol. 2024 Mar;44\(3\):584-602](#)
- ¹² [Nutrients 2023, 15\(5\):1236](#)
- ¹³ [FASEB J. 2010 Sep;24\(9\):35623571](#)
- ¹⁴ [Vitamins and Hormones Volume 120, 2022, Pages 47-78](#)
- ¹⁵ [National Kidney Foundation, Kidney Failure Risk Factor: Serum Phosphorus](#)
- ¹⁶ [Pflugers Arch. 2022 May 5;474\(8\):935–947](#)
- ¹⁷ [American Kidney Fund, High Phosphorus \(Hyperphosphatemia\)](#)
- ¹⁸ [Cleveland Clinic, Kidney Failure](#)
- ¹⁹ [Epidemiology. 2007;18\(4\):501-506](#)
- ²⁰ [Int. J. Mol. Sci. 2020, 21\(22\), 8810](#)
- ²¹ [Kidney International \(2009\) 76 \(Suppl 114\), S34–S42](#)
- ²² [J. Vasc. Dis. 2025, 4\(4\), 39](#)
- ²³ [Hypertension. 2020 Jul;76\(1\):236-243](#)
- ²⁴ [Physiol Rev. 2012 Jan;92\(1\):131-155](#)
- ^{25, 33} [J Clin Endocrinol Metab. 2015;100\(11\):4264-4271](#)
- ²⁶ [J Nephrol. 2020 Mar 4;33\(3\):509-527](#)
- ²⁷ [Oregon State University, Bone Health in Brief](#)
- ²⁹ [Nutr J 20, 41 \(2021\)](#)
- ³¹ [Nutrients. 2023 Feb 28;15\(5\):1236](#)