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Kidney Stones in Children Are Becoming More Prevalent — Here's Why and How to Fight Them

Analysis by Dr. Joseph Mercola | May 16, 2024

STORY AT-A-GLANCE

- Cases of kidney stones among children are increasing, and although less common than in adults, it could become a lifelong battle
- Oxalates, which are found in many plant foods, are a contributing factor to the rising cases of kidney stones. When these compounds bind with calcium, they form calcium oxalate crystals, which are microscopic and razor-sharp, and can cause significant tissue damage
- By optimizing your metabolic flexibility, you can maintain a low-oxygen environment in your gut. This allows healthy obligate anaerobes, which can help metabolize and eliminate oxalates, to thrive
- Removing high-oxalate foods from your diet is the first step to minimize their harmful effects and help heal your gut. Some strategies that can aid in eliminating oxalates are also discussed here

Kidney stones are hard masses that form from the chemicals in the urine when there's too much waste and too little liquid. They can be as small as a grain of sand, or as big as a pebble — in some cases, they can grow as large as a golf ball. As your body works to eliminate the stone, it can lead to irritation or blockage, causing intense pain and other symptoms.[1]

In adults, kidney stones are a common health complaint, with 8 out of 1,000 adults being diagnosed yearly.[2] Alarmingly, cases among children are increasing as well.

Is Your Child at Risk of Developing Kidney Stones?

According to an article in ABC7,[3] kidney stones have become more prevalent in children over the last 20 years. Although less common than in adults, it could still be a lifelong battle. The article tells the story of Alex Zellers, a 4-year-old with a rare genetic disease called cystinuria, which caused him to develop enlarged kidney stones that had to be surgically removed.[4]

> *"One stone in his kidney was the size of a golf ball. The other, in his bladder, was the size of a lacrosse ball. 'It's just like a giant dense egg. It's just a big mass,' described Kate, Alex's mother."*

In the article, Dr. Greg Tasian, a pediatric urologist with Children's Hospital of Philadelphia, explains how kidney stones form, saying "Your body doesn't absorb certain amino acids and that cystine accumulates and crystallizes in the urine forming stones early in life."

And although Alex's condition is rare, Tasian claims that he is seeing an increase in young patients with kidney stones and says that several lifestyle factors are to blame, such as eating more ultraprocessed foods, excessive of use antibiotics and being chronically dehydrated, especially during hot weather.[5]

However, there could be another more significant contributing factor, and it's found in the foods you eat — even those that are considered healthy.

Oxalates Are Linked to Kidney Stones, but What Are They?

Oxalates are natural compounds found in many plant foods, including beans, grains, seeds and nuts, fruits, berries and herbs.[6] They're also called dicarboxylic acid, meaning they are composed of two carbon dioxide (CO_2) molecules.

However, having two carboxyl groups (COOH), causes them to lose protons under physiological conditions. This leaves them with a negative charge, which then allows them to bind to positively charged ions like calcium.

Chemically, oxalate is a salt; and as with other salts, it forms crystals that your body innately has a limited capacity to process. When oxalates bind with calcium, they form calcium oxalate crystals, which are microscopic and razor-sharp and can cause significant tissue damage. And because they are not soluble, they can accumulate.

This is what causes kidney stones to form. Calcium stones are the primary type, making up 80% of kidney stones.[7] But contributing to the formation of kidney stones is just one of the ways oxalates wreak havoc on your health. These compounds can affect numerous body functions and cause a wide range of symptoms.

A High-Oxalate Diet Can Lead to Joint Pain, Digestive Problems and Skin Irritation

Excessive oxalates can affect your absorption of essential nutrients and lead to mineral deficiencies. When they accumulate in your joints, they can cause crystals, similar to those in the kidneys, to form. This can trigger inflammation and joint pain, resembling symptoms of gout or arthritis.

In your urinary tract, oxalates can cause irritation, discomfort and an increased risk of urinary tract infections (UTIs). The razor-sharp crystals can also make urination painful, and contribute to irritable bladder syndrome, which is characterized by frequent, urgent and/or painful urination.

Meanwhile, bloating, gas, diarrhea and abdominal pain can arise when oxalates affect your intestinal tract, especially in people with sensitive digestive systems or who have irritable bowel syndrome (IBS).

There's also research linking a high-oxalate diet with fibromyalgia symptoms, and while still not fully understood, the theory is that oxalate crystals may be causing inflammation in the muscles and connective tissues, causing widespread pain and fatigue.

Once your body tries to eliminate oxalates, they can be excreted through your skin, particularly if your kidneys can no longer process the excessive amounts of oxalates in your system. This can form crystalline deposits on your skin, causing irritation, rash and intense itching.

I struggled with this health problem 15 years ago, when I developed a rash that caused such intense itching it made me lose sleep. When scratched, the rash would turn into hard nodules that would last for months or years.

I tried numerous natural interventions, including icing the affected area and applying aloe gel, but could not find any long-lasting solution — it was only when I addressed the oxalates in my diet that I was able to find relief.

Oxalates Can Interfere With Your Cellular Functions

Another way that oxalates harm your health is by disrupting enzyme functions that are essential to cellular energy production. Oxalate ions can bind to the enzymes in the mitochondrial electron transport chain, which are essential for adenosine triphosphate (ATP) production.

Your mitochondria produce ATP, which is why they are called the "powerhouses" of your cells. ATP is the currency of your cellular energy and is the lifeblood of cellular processes. It powers everything, including processes like muscle contraction, nerve impulse propagation, synthesis of essential biomolecules and the maintenance of cellular homeostasis.

When oxalates disrupt ATP production, it can lead to decreased energy production and increased oxidative stress within cells. This then leads to a broader range of metabolic and physiological dysfunctions.

Avoid These High-Oxalate Foods

Everyone needs to be concerned about oxalates, not just those dealing with kidney stones or other chronic health issues, metabolic inflexibility or mineral imbalances. The first step is to identify high-oxalate foods and remove them from your diet, until your gut is healed.

I recently interviewed **Sally Norton**, who is an esteemed authority on oxalates. Her expertise is indeed invaluable for anyone seeking to understand this topic. In our discussion, she specified the foods that are particularly loaded with oxalates. You may be surprised, as some of these are on many people's "healthy foods" list:

- **Spinach —** Their oxalate levels can be as high as 600 to 800 mg per 100 grams.
- **Almonds —** Almonds generally contain about 122 mg of oxalates per 100 grams. However, all nuts in general are particularly problematic, since they contain linoleic acid (LA). Even macadamia nuts can add to your toxic load, as they contain oleic acid, which could just be as bad as LA.

  > *"These seeds from the trees are designed with all these multiple anti-nutrients to kick you in the gut. All the anti-nutrients are gut toxic. They're all causing some degree of gut damage. Nuts are just designed to be indigestible. They're designed to dismantle your ability to digest food. If you want a healthy gut, you don't want nuts kicking your gut over and over again,"* says Norton.

- **Peanut butter —** Peanut butter can have around 140 mg per 100 grams.
- **Sweet potatoes —** They contain about 30 mg of oxalates per 100 grams. (Although this is considered high compared to other vegetables, it's actually much lower than spinach or nuts)
- **Figs —** They have approximately 40 mg per 100 grams.

In addition to spinach, high-oxalate leafy greens that are considered "superfoods" are Swiss chard and beet greens, so you may want to avoid them if you're sensitive to oxalates or are struggling with kidney stones.

You may also want to avoid these collagen-rich protein sources until your gut is healed, as collagen breakdown can lead to oxalate production and aggravate your condition:

- Bone broth
- Gelatin
- Animal skins, tendon and ligaments
- Meat cuts with connective tissues such as oxtail, neck and shank
- Organ meats like heart and liver

Healing Your Gut Can Help Address Oxalate Toxicity

I mentioned above that healing your gut health is crucial to help curb the effects of oxalates, but before you do that, you need to address your metabolic inflexibility. This refers to your body's diminished ability to switch between burning fuel sources, mainly carbohydrates and fats.

When you're metabolically inflexible, it can affect your body's ability to produce energy. This can have a profound impact on your gut health, particularly your large intestine, as it hinders your body's ability to maintain a low-oxygen environment in this organ.

You need a low-oxygen environment in your large intestine because not only does it help keep pathogenic bacteria in check, but it also allows healthy obligate anaerobes to thrive. These are a primitive type of bacteria that cannot survive when exposed to oxygen.

So what do obligate anaerobes have to do with oxalate toxicity? It turns out that there are obligate anaerobes that can digest oxalate crystals, called Oxalobacter formongines.[8] These beneficial bacteria thrive in a low-oxygen environment and have a unique ability to efficiently metabolize oxalates.

Using specific enzymes, Oxalobacter bacteria break down oxalate crystals into formate and carbon dioxide. The carbon dioxide then helps retain the low-oxygen environment in

your intestine, allowing these primitive organisms to thrive and support your health. Through simple passive diffusion, the crystals are released and wind up in your intestine where the Oxalobacter continues to digest them until the oxalate toxicity issues disappear.

To put it simply, you need to optimize your metabolic flexibility so you can maintain a low-oxygen environment in your gut and allow Oxalobacter bacteria to radically reduce the level of oxalates in your tissues.

I believe this is the ultimate cure for most kidney stones. It's far more efficient and effective than the conventional approach for this common health condition, as it goes straight to the root cause of the problem.

Step 1 in healing your gut would be to eliminate linoleic acid (LA) from your diet, as LA precipitates the formation of peroxynitrites that ravage mitochondrial function and impede energy production, forcing your body to rely on glycolysis in the cytoplasm of your cells rather than the electron transport chain (ETC) of your mitochondria.

This, in turn, results in the impairment of your gut by allowing oxygen leakage into your gut that kills beneficial bacteria and allows pathogenic bacteria to thrive.

There's No Quick Way to Detox Oxalates

If you or your children struggle with kidney stones or have other signs of oxalate toxicity, I encourage you to watch my interview with Norton, as we discuss many strategies and food choices that can help minimize the harmful effects of oxalates or aid in their elimination.

Aside from limiting your intake of high-oxalate foods mentioned above, here are some key recommendations to remember:

- **Increase your calcium intake —** When you consume foods high in calcium or take calcium supplements, they can bind to oxalates in the intestines and prevent them

from being absorbed. They will also help facilitate oxalate excretion through your stool. Foods rich in calcium include dairy products and leafy greens.

Stay hydrated — Drinking sufficient water will help flush out oxalates through your urine and keep kidney stones from forming.

Optimize your gut health — Promote a healthy gut microbiome by consuming probiotic-rich foods like yogurt, kefir and fermented vegetables. This will help support the growth of Oxalobacter and other beneficial bacteria.

Citrate consumption — Citrate, found in citrus fruits like lemons and oranges, can help by binding with calcium and oxalate, thereby reducing the formation of kidney stones. Avoid over-supplementation with ascorbic acid, however, as high doses can convert into oxalate. Ascorbic acid is the most common form of vitamin C used in dietary supplements.

Cook high-oxalate foods well — Cooking methods that involve boiling can help reduce oxalate content in foods as the oxalates will leach into the cooking water.

Topical calcium for oxalate-related skin irritations — Applying topical calcium can alleviate your symptoms by precipitating oxalates at the site.

Remember that healing your body takes time — don't expect results overnight. It's a marathon, not a sprint. In some cases, it may take two years to two-and-a-half years after following a low-oxalate diet to see the effects, and they may not be pleasant.

For example, you may suddenly get sicker, as your kidneys are finally cleaned up and can excrete oxalate more efficiently. This means your body is tapping into deeper deposits. Possible side effects can include gastritis, migraines, anxiety attacks, gout and other types of toxic reactions.

Your uric acid may also increase, as it is replacing the oxalic acid. In this instance, this means you're clearing oxalate. You may also notice tartar buildup on your teeth, gritty

stools, gritty eyes, hemorrhoids and burning stools — all these are symptoms that your body is healing itself.

Cellular Energy — The Very Essence of Life

My personal struggle with the skin irritation triggered by oxalates 15 years ago is an eye-opener. It's what I consider the pivotal turning point in my health journey, as it is the best illustration of just how crucial it is to have a healthy, well-functioning microbiome to your overall health.

Unfortunately, virtually none of us have a healthy gut microbiome. This is a result mainly because of large multinational corporations taking advantage of us and steering us toward unnatural products that end up harming our mitochondria and ultimately our ability to create cellular energy.

I believe that your ability to produce sufficient cellular energy is the single most important factor to fuel your body's innate repair and regeneration processes so it can recover from diseases and any type of health obstacle.

With that said, I will be releasing a new book this summer that delves into the science of cellular energy. In this book, I'll explain in detail the biochemical pathways that provide energy to your cells, as well as also how disrupting these pathways can put you or your loved ones at risk of progressively worsening health issues.

I'll also share practical strategies to help support your mitochondrial health and enhance your cellular energy production through healthy food choices, lifestyle changes and proper supplementation. This book is a definite must-read, as it can help you rediscover the foundational strategies to heal your body and ward off diseases, so stay tuned.

Sources and References

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