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EVIDENCE-BASED KETO

YOUR NO-HYPE GUIDE TO THE KETOGENIC DIET



Want to learn more about
the ketogenic diet?

[Get Evidence-based Keto](#)

How to Use This Guide

A quick Google search will bring up countless results on ketogenic diets — about 147 million hits at the time of writing.

Not only are blog posts (and magazines, and celebrities ...) into keto, but the past few years have seen a sharp increase in the number of scientific articles investigating the diet. All this attention has brought along with it a lot of hype and confusion about just what the keto diet can do.

Figure 1: Scientific articles on keto published per year

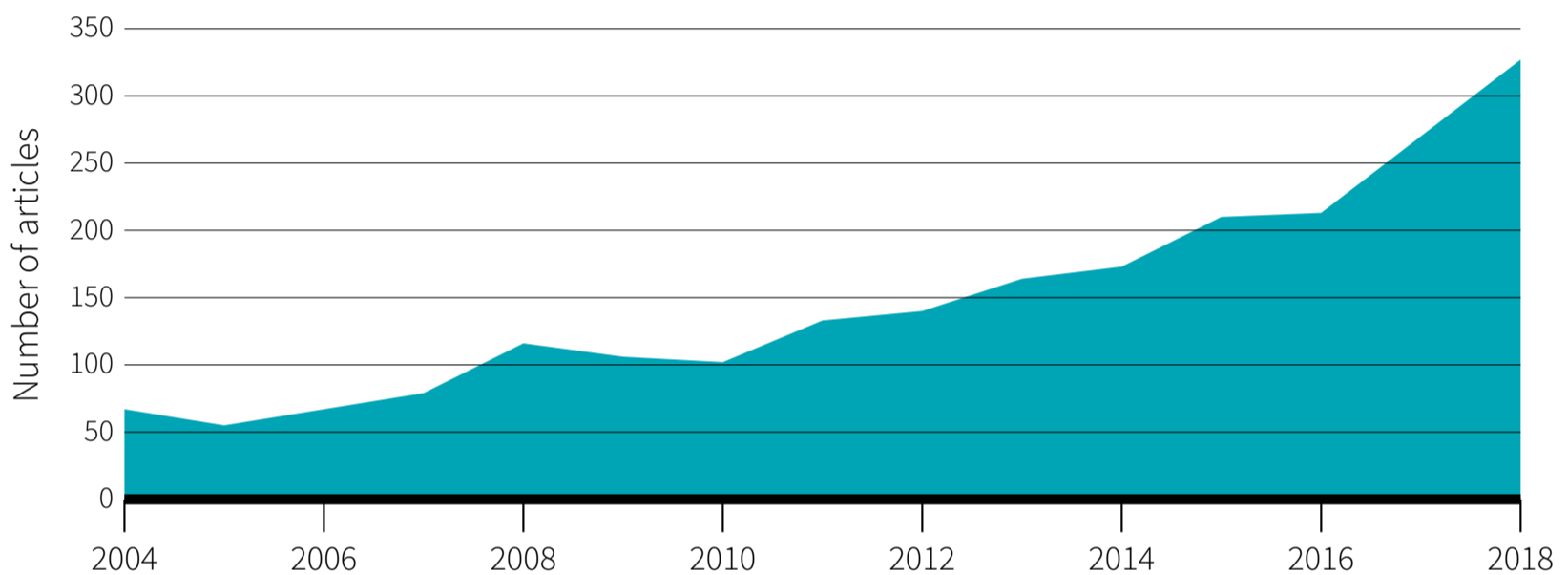
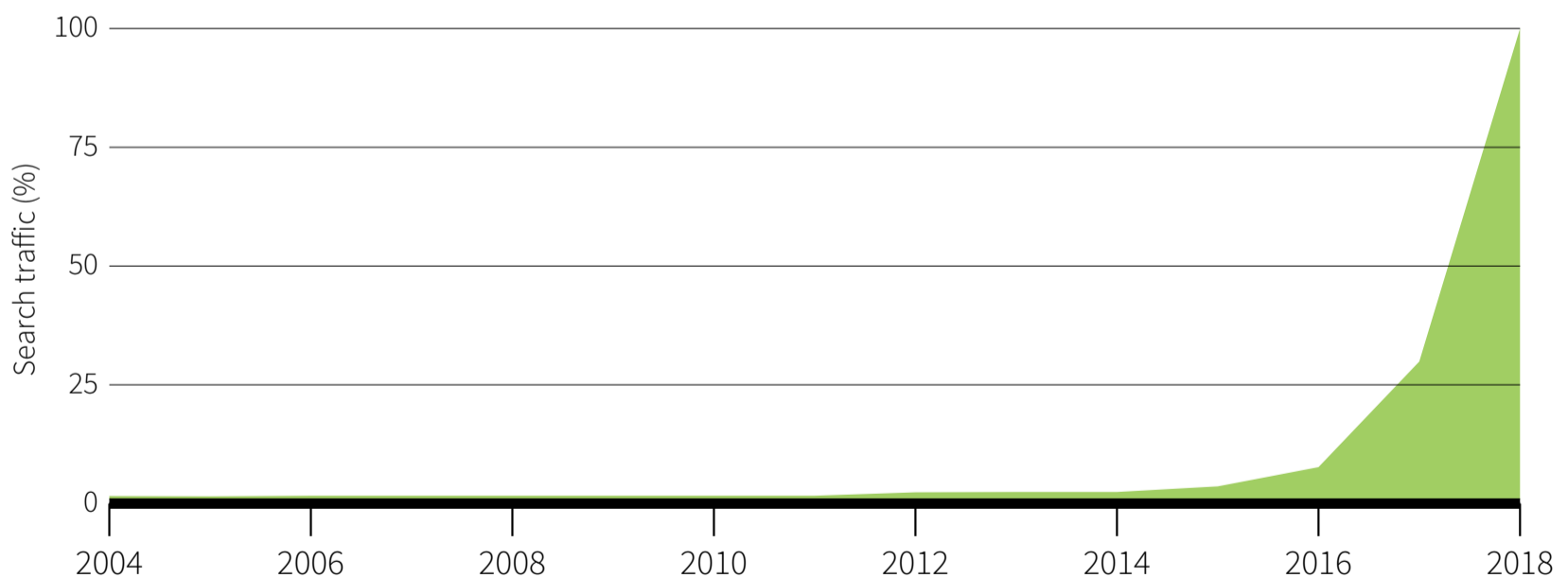


Figure 2: Google search trend for *keto diet*



That's why we've written this guide. What does the latest high-quality evidence say about keto? Is it safe? What are its benefits and downsides? What (and whom) is it best for? How well does it work in the long term? What are the results experienced by endurance athletes, strength athletes, regular gym goers, couch potatoes, and many other categories? That's what you're about to discover.

Choose your own adventure

Give me what I need to get started

If you're a cut-to-the-chase kind of person, someone who just wants to know the "what" of keto, then [Keto 101: The Practice of Keto](#) is where you should start. You will find:

- An overview of the keto diet (basic information and core concepts)
- A guide to getting your diet started
- Advice to help you stick to your diet in a world filled with carbs
- Tips to help you deal with unwanted side effects that may arise on a keto diet
- Answers to common questions about keto's interactions with specific health conditions

Give me all the facts

If the basic facts aren't enough for you, if you want to know the underlying "why" behind each "what", then head over to [Keto 201: The Science of Keto](#), where each chapter provides a deep dive into the scientific literature. Is keto better for fat loss than any other diet? Does it hurt muscle growth? How does it affect your blood sugar levels? We've got you covered.

Additionally, every chapter is enriched with explainer boxes:

- Boxes that **teach** important scientific concepts
- Boxes that **analyze** essential studies
- Boxes that **introduce** emerging research
- Boxes with **warnings** and **tips** to keep in mind

Some Highlights

Body composition



Why you quickly lose weight on keto (at first)

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Is keto better for fat loss?

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The best-kept secret of diet trials

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How keto affects lean mass

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How to improve body comp on keto

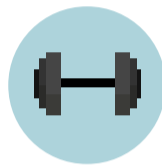
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The limitations of keto and muscle building research

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How keto-adaptation affects endurance performance

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Scenarios in which keto may help endurance

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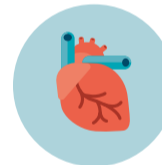
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Blood sugar

Warnings



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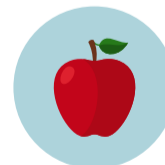
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Discover lesser-known interactions between keto and drugs

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Chapter 5: Troubleshooting Keto

What can you do about the “keto flu”?

In the first 1–4 weeks of trying the keto diet, you may experience fatigue, nausea, bad breath, intestinal discomfort, headaches, brain fog, or other various ailments. This collection of symptoms is commonly referred to as the “low-carb flu” or “keto flu”. Luckily, they are often temporary and we walk you through what steps to take to help prevent or alleviate some of these unwanted side effects.

The keto flu will manifest in different ways to different people, if at all. [As we saw](#), we go into more depth on how to avoid or manage adverse reactions and side effects you may experience on the keto diet. Very briefly, here are some general strategies you may try.

- Increase your [fiber](#) intake, which can help to alleviate constipation.
 - [Psyllium](#) can be a good option due to its high viscosity and low degree of fermentation, making it less likely to produce unwanted side effects. Take 10–15 g/day in divided doses across multiple meals.
- Increase your [fluid](#) intake, which may help to generally alleviate symptoms.
 - Add at least 710 mL (24 oz) of a carb-free beverage to your diet.
- Increase your [electrolyte](#) intake, as many people see intakes drop on keto
 - For **sodium**, try increasing your daily intake to 3–5 g/day. Remember, this is a *total* of 3–5 g/day from foods plus added sodium, not just from added sodium. If you have been prescribed a low-sodium diet, speak with your physician before upping your intake.
 - For **magnesium**, start with 200 mg of *elemental magnesium* once a day. If you don’t notice symptom improvement, you can increase your dose to 350 mg/day.
 - For **potassium**, supplements will likely be insufficient for improving overall potassium intake, as most contain <100 mg (compare that with an RDA of 3,400 mg for adult males and 2,600 mg for adult females).¹ Incorporating more potassium-rich foods into your diet can help maintain adequate levels during your transition to the keto diet. Remember, too much potassium at once on an empty stomach can lead to [hyperkalemia](#) (very high levels of potassium in the blood).

- For **calcium**, supplementation is best considered only after a dietary evaluation, as overconsumption may have negative effects on cardiovascular health.^{2,3} Track what you eat for a week and compare the calcium content of your diet with the RDA for your gender and age. If, on average, you are getting less than 80% of your RDA, supplementation becomes a possibility, but you should first consider tweaking your diet.
- Get sufficient and quality **sleep**. Can never go wrong with getting good sleep.

Table 1: Recommended hours of sleep, by age

| AGE | RECOMMENDED | MAY BE APPROPRIATE | NOT RECOMMENDED |
|-------------|-------------|--------------------|-----------------|
| 0–3 months | 14–17 | 11–19 | <11 or >19 |
| 4–11 months | 12–15 | 10–18 | <10 or >18 |
| 1–2 years | 11–14 | 9–16 | <9 or >16 |
| 3–5 years | 10–13 | 8–14 | <8 or >14 |
| 6–13 years | 9–11 | 7–12 | <7 or >12 |
| 14–17 years | 8–10 | 7–11 | <7 or >11 |
| 18–25 years | 7–9 | 6–11 | <6 or >11 |
| 26–64 years | 7–9 | 6–10 | <6 or >10 |
| ≥65 years | 7–8 | 5–9 | <5 or >9 |

Adapted from Hirshkowitz. *Sleep Health*. 2015. PMID:[29073412](https://pubmed.ncbi.nlm.nih.gov/29073412/)

What can you do about the “keto breath”?

The ketone body acetone can be excreted via your breath, giving it a “nail polish remover” or “slightly fruity” smell. This smell is commonly referred to as “keto breath”. If you don’t like it, here are some potential solutions:

- Wait it out. Sometimes this can just go away on its own once your body has better adapted to the keto diet.
- Drink more fluids. Acetone can also be excreted through your urine. Theoretically, drinking more fluids may help decrease the amount that is excreted through your breath.
- Decrease ketone levels. If your breath is really bothering you, you can try to increase your daily carb intake level to help decrease the formation of ketones. Try adding 10–20 grams of carbs back into your diet and see what results this produces. Individual results will vary, so some trial and error testing will be needed.

- Mask the smell. Keep some sugar-free or low-carb mints, gums, mouthwashes, strips, or sprays on hand. Use as needed to keep “keto breath” at bay.

How do you avoid constipation?

If you experience constipation, try taking the following actions.

- Increase your soluble fiber intake. [Psyllium](#) may be a preferential fiber to start with due to its high viscosity and low degree of fermentation, thus being less likely to produce unwanted side effects. To supplement with psyllium, take 10–15 g/day in divided doses across multiple meals.
- Hydrate. Increase fluid intake throughout the day so that you’re adding at least 710 mL (24 oz) to your diet. The infamous cup of coffee may help here too.
- Strategically use oils. Adding 1–2 tablespoons (15–30 grams) of [MCT oil](#) or mineral oil to your diet per day may help.
- If you need more immediate relief, the use of the over-the-counter drug [polyethylene glycol 3350](#) (MiraLAX®) can also be used.

How do you avoid muscle cramps?

It is possible this is occurring due to being under-hydrated and not consuming enough electrolytes.

Should you increase your fluid intake?

A keto diet can have a diuretic effect on your body, and maintaining adequate hydration can be helpful for fending off symptoms of the “keto flu” and constipation. Your body can adjust to this after a few weeks, but if you’re feeling a little dehydrated be sure to increase your daily fluid intake. A good starting point may be to take in at least 710 mL (24 oz) extra fluids per day.

Should you increase your electrolyte intake?

On a keto diet, a drop in electrolyte intake may be responsible for some of the symptoms of the “keto flu” (nausea, fatigue, brain fog, etc). To alleviate some of these symptoms, you can increase your intake of magnesium, sodium, and potassium in the first few weeks of a keto diet.

- For **sodium**, try increasing your daily intake to 3–5 g/day. If you have been prescribed a low-sodium diet, speak with your physician before doing so.
- For **magnesium**, start with 200 mg of *elemental magnesium* once a day. Increase to 350 mg as needed if no symptom improvements are seen.
- For **potassium**, supplements will likely be insufficient for improving overall potassium intake, as most contain <100 mg (compare that to an RDA of 3,400 mg adult males and 2600 mg for adult females).¹ The incorporation of more potassium-rich foods into your diet can help maintain adequate levels during your transition onto the keto diet. A list of low-carb foods rich in potassium is available in appendix B.
- For **calcium**, supplementation with calcium is best considered only after a dietary evaluation, as overconsumption may have negative effects on cardiovascular health.^{2,3} Track what you eat for a week and compare the calcium content of your diet with the RDA for your gender and age. If, on average, you are getting less than 80% of your RDA, supplementation becomes a possibility, but you should first consider tweaking your diet.

Are there supplements you should take?

There are certain micronutrients that may be underconsumed on a keto diet.⁴ Where practical, supplements may be used to help fill these nutrient gaps. Here are the nutrients where you may experience low intakes.

- [Calcium](#)
- [Fiber](#)
- [Iodine](#)
- [Iron](#)
- [Magnesium](#)
- [Potassium](#)
- Sodium
- [Vitamin A](#)
- [Vitamin B1](#) (thiamine)
- [Vitamin B9](#) (folate)
- [Vitamin C](#)
- [Vitamin D](#)

We cover each of these nutrients in the [Warnings](#) chapter and show you how to modify your diet with foods and/or supplements to ensure you are receiving adequate levels.

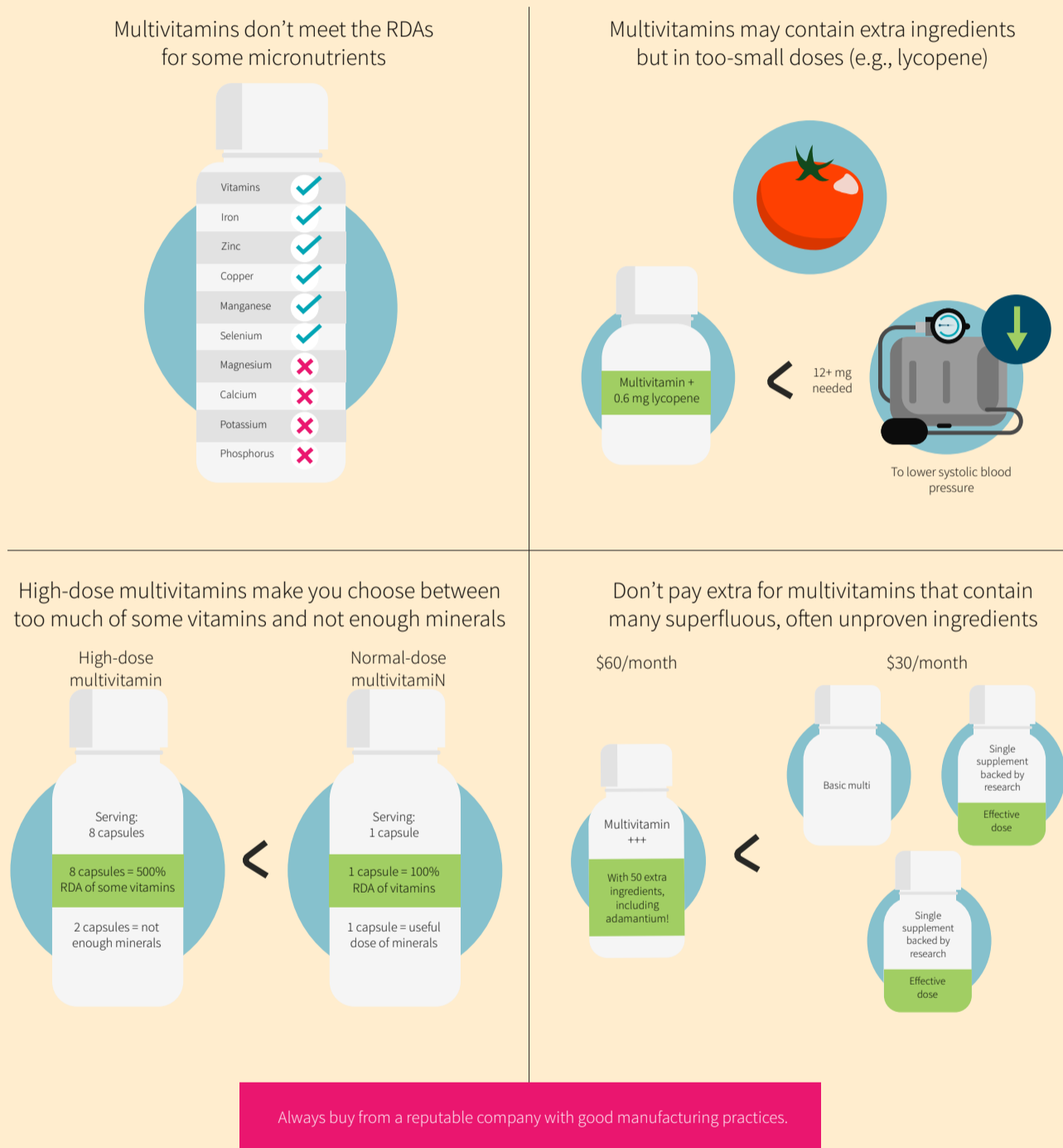
Additionally, if you are looking to increase your exercise performance, the addition of creatine monohydrate may help. The standard dose is 5 g/day. People with more muscle mass may benefit from as much as 10 g/day, but this claim is not fully supported by the evidence. To supplement 10 g/day, take 5 grams twice a day.

Tip: Much ado about multivitamins

You may be inclined to take a multivitamin while you are on a keto diet as a sort of insurance policy against nutrient deficits. A multivitamin isn't strictly necessary but could make things easier **if it is well formulated**.

When buying a multivitamin, check on the label the content of each serving, the number of pills per serving, and the number of servings per day; don't pay more for dubious bells and whistles; and stick to a company with a reputation for good manufacturing.

Figure 1: Factors to consider when buying a multivitamin



Should you take ketone supplements?

Ketones taken as a supplement (aka exogenous ketones) are very trendy in the keto diet space. As with most new supplements, there's a lot of hype and precious little research. Let's review the data to get a clear picture of what the evidence currently says.

Want to learn more about the ketogenic diet?

Get Evidence-based Keto