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Is Keto Bad for the Thyroid?

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144 Comments

Keto is fantastic (https://www.marksdailyapple.com/the-definitive-guide-to-keto/), everyone says. It's a great way to lose weight, improve cognition (https://www.marksdailyapple.com/the-fat-burning-brain-what-are-the-cognitive-effects-of-ketosis/), and stave off degenerative disease. It may help your performance in the gym and on the track (https://www.marksdailyapple.com/how-using-fat-for-fuel-can-boost-athletic-performance/). It could even give Grandpa some respite from Alzheimer's.

But it's hell on your thyroid (https://www.marksdailyapple.com/are-you-suffering-from-thyroid-dysfunction-heres-how-a-primal-lifestyle-can-help/). Right?

Keto detractors and proponents alike often warn that remaining in ketosis will tank your thyroid. The thyroid's an important gland, exerting major influence over essential systems like fertility, energy, metabolism, body temperature regulation, blood lipids, and general wellness. It controls the metabolic rate of every organ in the body. We want it working well, so this is a major blow to keto—if the criticism holds true. Fortunately, there's much more to this story.

The Problem with Keto—Thyroid Research

Up till now, the vast majority of studies on the effects of low-carb, high-fat diets on thyroid health have used high-PUFA high-fat diets. Could this confound the results? Yes.

It turns out that linoleic acid suppresses thyroid signaling. See the impact for yourself….

Rats on a corn oil diet convert less (https://www.ncbi.nlm.nih.gov/pubmed/3705) T4 to active T3 than rats on a lard diet.

Rats on a safflower oil diet have a more greatly reduced metabolic response to T3 (http://www.ncbi.nlm.nih.gov/pubmed/2352037) than rats on a beef fat diet.

Rats on a high-PUFA diet have brown fat (https://www.marksdailyapple.com/a-primal-primer-brown-adipose-tissue/) that's less responsive to thyroid hormone (https://www.ncbi.nlm.nih.gov/pubmed/6884571). Remember, brown fat is the type that

Rats on a long-term diet high in soybean oil have terrible body temperature regulation (https://www.ncbi.nlm.nih.gov/pubmed/24882411), which thyroid function in large part controls.

The more rapeseed meal (from which PUFA-rich canola oil is derived) you feed turkeys, the worse their thyroid signaling gets and the less meat/eggs they produce (https://www.ncbi.nlm.nih.gov/pubmed/22184447).

Heck, back in the 70s, researchers proposed using vegetable oil (https://www.ncbi.nlm.nih.gov/pubmed/3705) as a treatment for hyperthyroidism.

This reduced thyroid signaling isn't a function of all polyunsaturated fats, however. Omega-3 PUFAs, found in seafood, *increase* thyroid signaling in the liver (https://www.ncbi.nlm.nih.gov/pubmed/19793640). Keep eating fish, folks.

What Other Indications Tell Us

Unfortunately, we don't have any direct studies comparing the effects of PUFA-based and SFA/MUFA-based high fat diets on thyroid function in humans. We do have a few that offer some revealing indications, however.

In 1995, researchers placed healthy young adults on either a low-carb, high-protein diet or on a low-carb, high-PUFA diet. The latter group experienced big drops in T3 levels (https://www.ncbi.nlm.nih.gov/pubmed/3900181), though the significance of the change wasn't explored.

Later, Jeff Volek ran a low-carb, high-fat study (https://www.ncbi.nlm.nih.gov/pubmed/12077732?dopt=AbstractPlus) in adults using a diet with Primal-ish fatty acid ratios (8% carbs, 61% fat, 30% protein, with 25% calories coming from SFA, 25% from MUFA, and 11% from PUFA). He didn't directly measure T3, but the high-fat group had normal T4 and lost significant body fat, which is very hard to do if you're hypothyroid.

Another, much older study (https://www.ncbi.nlm.nih.gov/pubmed/21023298) pitted the body temperature regulation of low-carb, high-fat (from cream (https://www.marksdailyapple.com/lemon-and-sage-chicken-in-cream/) and butter (https://www.marksdailyapple.com/grass-fed-butter/)) dieters against that of high-carb, low-fat dieters by exposing both groups to several hours of -20°C exposure under different feeding conditions. After fasting, both groups reduced body temperature by the same amount in response to cold. After eating, things changed. Those who ate the high-fat meal experienced lower drops in body temperature. Since body temperature regulation is controlled by the thyroid, this suggests that 56 days of high-fat (from cream and butter) dieting had a positive effect on thyroid function.

Key Points We Miss about Keto

Yet, the fact remains that many people report disrupted thyroid panels after going

and selenium, and they aren't overdoing goitrogens (don't eat 2 pounds of Brussels sprouts a day).

What else could be happening?

Calorie restriction lowers thyroid hormone. After all, the thyroid acts as barometer of environmental abundance. If things are good and there's plenty of food coming in, the thyroid will be active, allowing babies to be made, metabolic output to be high, and energy levels to shoot up. If things are bad and food is scarce, the thyroid will down-regulate, limiting fertility, energy, and metabolic output. Calorie restriction tells the body that things are bad and food is scarce, because, well, energy *isn't* coming in like before.

Ketogenic diets are excellent at getting people to inadvertently reduce calorie intake. That's one of their primary benefits, in fact. But if you go *too* low, you may lower T3.

Weight loss lowers thyroid activity. Irrespective of the diet used, losing weight reduces conversion of T4 into active T3 (https://www.ncbi.nlm.nih.gov/pubmed/23902316). Weight loss is a common occurrence on a ketogenic diet. For many, it's the primary goal. If you have weight to lose, it's going to happen on keto.

You're trying to train too much and too intensively on keto. When you endure psychological or physiological stress, the body converts T4 into something called reverse T3. Reverse T3 does the opposite of T3—it lowers metabolism and conserves energy, in case things are falling apart around you. If that seems like a disproportional response to doing too much CrossFit without eating carbs, remember that the environmental conditions under which this physiological system evolved featured such stressors as famine, war, and disease.

All that said…

Maybe slightly lower T3 is a feature, not flaw, of ketosis. The longest living creatures on earth tend to have lower levels of T3. **Long-living humans often have a genetic predisposition toward lower levels of T3 (https://www.ncbi.nlm.nih.gov/pubmed/20739380),** as if slowing things down staves off aging. If that relationship holds and is causal, perhaps emulating it with dietary means can provide longevity benefits.

You'll often hear that carbs increase T3. Put another way, **the thyroid increases T3 production to *deal with the glucose*.** Carb consumption increases iodine (https://www.marksdailyapple.com/iodine-deficiency/) requirements because *the thyroid requires more iodine to make more T3 to deal with the carbs*.

This doesn't mean carbs are good or bad for the thyroid. It just means carbs require more T3 to metabolize. That "extra" T3 is intended for glucose metabolism, not necessarily "making you feel awesome." If anything, **a well-constructed and maintained keto diet has the potential to make you more *efficient* with your thyroid levels.** Since you're not burning excess glucose, you can get away with lower T3 levels without incurring the negative symptoms normally associated with low T3.

But if you're shivering all the time, your lipids are skyrocketing, you can't muster the energy to maintain basic order in your life (let alone exercise or excel), you're having fertility issues, and you just feel generally awful, that's a problem.

You'll know it if keto has tanked your thyroid. It's difficult to miss. Thyroid panels can help you see, but symptoms are the ultimate arbiter.

Thanks for reading today, everyone. Now I'd love to hear from you. Are you on a ketogenic diet? How's your thyroid? What feedback, stories and questions do you have? Be well and take care!