

KETO FOR BEGINNERS

THE EASY TO FOLLOW COMPLETE KETOGENIC GUIDE



CONTENTS

1. KETO FOR BEGINNERS.....	4
WHAT IS THE KETOGENIC DIET?	4
WHAT ARE KETONES.....	4
WHAT ARE KETO MACROS?.....	5
HOW TO TELL IF YOU'RE IN KETOSIS.....	5
HOW TO MEASURE KETONES.....	6
TYPES OF KETOGENIC DIETS.....	7
INTERMITTENT FASTING ON KETO	7
2. UNDERSTANDING NUTRITION LABELS	8
DID YOU KNOW?	8
3. WHAT TO EAT ON KETO (AND WHAT TO AVOID)	10
KETO ANIMAL FOODS	10
KETO VEGETABLES.....	12
KETO FRUIT.....	14
KETO NUTS AND SEEDS.....	15
KETO DAIRY.....	16
SATURATED	18
MONOUNSATURATED	18
POLYUNSATURATED.....	18
TRANS FAT	18
SPICES	20
CONDIMENTS.....	21
KETO VS. LOW-CARB.....	23

4. IS A VEGAN KETO DIET REALLY A THING?	24
5. KETO DIET BENEFITS	26
KETO FOR WEIGHT LOSS.....	26
POSSIBLE THERAPY FOR NEUROLOGICAL DISEASES.....	27
ATHLETIC PERFORMANCE	28
OPTIMAL BRAIN FUEL	29
LESS CHRONIC INFLAMMATION	30
LOWER RISK OF HEART DISEASE	31
REVERSING TYPE 2 DIABETES AND MANAGING TYPE 1 DIABETES.....	32
6. WHAT CAN YOU EXPECT WHEN STARTING KETO?	33
KETO FLU (AKA CARBOHYDRATE WITHDRAWAL)	33
WHAT ABOUT NUTRIENT DEFICIENCIES?.....	34
WHAT ABOUT VITAMIN C ON KETO	34
ATHLETIC PERFORMANCE	35
SIDE EFFECTS OF ENTERING KETOSIS.....	35
SHOULD YOU TRY KETO?.....	36
WHAT ABOUT EXOGENOUS KETONES? (KETONE SUPPLEMENTS).....	37
PEOPLE WITH THERAPEUTIC NEEDS	37
ATHLETES	37
DON'T CHEAT (BUT IF YOU DO, UNDERSTAND WHAT YOU'RE MISSING OUT ON).....	38
CONCLUSION	39

1. KETO FOR BEGINNERS

WHAT IS THE KETOGENIC DIET?

The ketogenic diet, or keto for short, is a style of eating that focuses on, first and foremost, keeping carbs very low and secondly, having a high-fat consumption; you may also hear it referred to as “high fat-low carb” diet. A hallmark of this way of eating is to put the body into a ‘fat burning state’ whereby the body burns more fat compared to what you would on a high carb diet. In doing so, your body converts fats into little molecules called ketone bodies, which can contribute to ATP (cellular energy). By teaching the body to rely on an alternate source of energy aside from glucose, we’re able to alter how it uses energy.

WHAT ARE KETONES

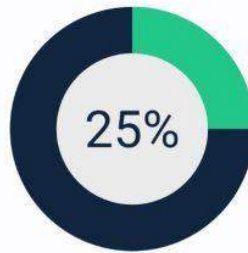
Ketones are molecules formed from the fats, like those released from your belly. This tends to happen at a higher rate on a ketogenic diet, but only if carb intake is sufficiently low, thus forcing your body to rely on an alternative source of fuel — fat. Basically, you turn fat into ketones which, when used for energy, eventually get turned back into acetyl-CoA, the molecule your cellular ‘engines’ (mitochondria) actually use to make ATP.

Ketogenesis is the process of making ketones from fats. When this happens at a high enough rate, you’re said to be ‘in ketosis’. Ketosis is a metabolic state, but there’s not an exact number to tell you when you’re in or out of ketosis.

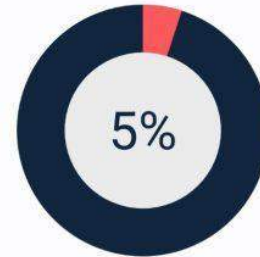
WHAT ARE KETO MACROS?



FATS



PROTEINS



CARBS

Depending on whether you follow a strict keto or simply a very low-carb diet, your macronutrient ratios may differ. Typically, if you're weight stable, your macronutrient breakdown will look a little something like this:

Your macronutrient and calorie breakdown will also depend on specific goals and lifestyle factors such as sleep, exercise patterns, stress levels, and genetics. Just remember, we're all unique and have different needs, so it's important to understand your lifestyle and tailor your macronutrients to what your body needs.

HOW TO TELL IF YOU'RE IN KETOSIS

Your body doesn't provide you with a clear signal saying "I am in ketosis" to let you know whether you are or not, and sometimes going off feelings isn't that easy. Here are some key physical signs to look out for that will indicate when you're in ketosis.

- 'Fruity' breath (mostly at the start)
- Fewer sugar or starch cravings
- Increased focus
- Stable energy levels

HOW TO MEASURE KETONES

Being on a keto diet doesn't mean you have to constantly measure your ketones. In fact, for most people, it makes sense to gain an intuitive sense if you're 'in or out'. However, most people will benefit from initially checking and people with medical conditions requiring a certain ketone level will have to do so regularly. To each his own.

So if you're not totally sure whether you're in ketosis, there are a few simple at-home ways to measure your ketone levels that will indicate how ketogenic you are:

- Urine testing (peeing on a strip)
- Breath testing (blowing into a device)
- Blood testing (pricking your finger for a drop of blood)



BREATH



URINE



BLOOD

Blood testing provides the most accurate picture of how ketogenic you are, but breath and urine testing can be useful depending on the circumstance.

TYPES OF KETOGENIC DIETS

The ketogenic diet seems pretty straightforward, but there isn't just one way to go about it. In order to stick with a diet and have the most favorable outcomes, it's important that it fits well with you and your lifestyle, which is why with keto, there are a few different options to choose from.

Each has a slight variation on carbs vs. fat intake to suit your needs and your health goals. Which type of diet you follow will also be determined by if you follow a meat or plant-based diet. When choosing which one you like best, make sure you have clear goals in mind. It may take some experimentation in order to find what works for you.

The standard ketogenic diet (SKD)

The targeted ketogenic diet (TKD)

The cyclical ketogenic diet (CKD)

The carnivorous or higher-protein ketogenic diet

INTERMITTENT FASTING ON KETO

For people new to the ketogenic diet, intermittent fasting can seem quite daunting. But let us tell you, it's nothing to fear. While going longer periods of time without eating can seem absolutely horrible, it doesn't have to be and is in fact quite liberating.

So what is intermittent fasting? It's simply the idea of rearranging your eating schedule to allow your body to go anywhere from 12 to 16 hours without food throughout the 24 hour day.

But there isn't just one way to do intermittent fasting. You can work it to fit into your schedule — whether it's the 16/8 method, alternate day fasting, the 24-hour method, or one meal a day, IF adapts to you and your needs.

If you're curious about intermittent fasting, it's a great thing to incorporate with the ketogenic diet. Why is this? Because a well-formulated keto diet helps to normalize appetite, which tends to naturally move people into intermittent fasting.

2. UNDERSTANDING NUTRITION LABELS

Reading nutrition labels is something that seems like common sense, but it can actually be a little deceptive if you're not entirely sure what you're looking for. And especially with the ketogenic diet, where you're trying to avoid bad fats like seed oils and 'hidden' carbs, being able to read and understand nutrition labels is crucial.

There are a few basic categories you should be able to recognize:

- Serving size
- Calories (and calories from fat)
- Total Fat
- Saturated fat
- Trans-fat
- Polyunsaturated fat
- Monounsaturated fat
- Total carbohydrates
- Fiber
- Sugar
- Protein

NUTRITION FACTS			
Serving Size 5 oz. (144g)			
Serving Per Container 5			
Amount Per Serving			
Calories 120		Calories From Fat 35	
% Daily Values*			
Total Fat 6%			10%
Saturated Fat 3.6g			8%
Trans Fat 1.5g			
Cholesterol 112mg			12%
Sodium 240mg			10%
Total Carbohydrate 20g			6%
Sugars 16g			8%
Dietary Fiber 10g			
Protein 2.5g			
Vitamin A 2%			Vitamin C 1%
Calcium 3%			Iron 1%
Total Fat	Less Than	60g	55g
Saturated Fat	Less Than	25g	72g
Cholesterol	Less Than	40g	17g
Sodium	Less Than	32g	80g
*present daily values are based on a 2,000 calorie diet. your daily values may be higher or lower depending on your calorie needs.			

DID YOU KNOW?

Fibre is only found in plant foods, right? Nope! There's such a thing as animal fiber and you've probably already had some. Animal fibre is all the ligaments, tendons, and bones you might get from canned sardines. Or when gnawing the last bits of rib-eye off a bone. Eating animals 'nose-to-tail,' so to speak, is another way of getting fermentative substrates in (also known as fiber).

It's also important that you not only know what the macronutrient content of your food is, but what is in your food. Make sure that before you buy a product, you know what the ingredients are. Foods are packaged to appear healthy, but when you actually read the ingredients, you'll see that they sometimes aren't.

Here are three suggestions to remember when looking at an ingredient list:

1. the fewer the ingredients, the better;
2. watch out for the dozens and dozens of different names for starches and sugars; and
3. avoid all products with seed oils (but animal fats, olive oil, butter, and coconut oil are fine). And while you may think being labelled as “organic” or “all natural” makes it healthy, these terms are actually meaningless. Sugar is sugar, whether it’s organic or not.

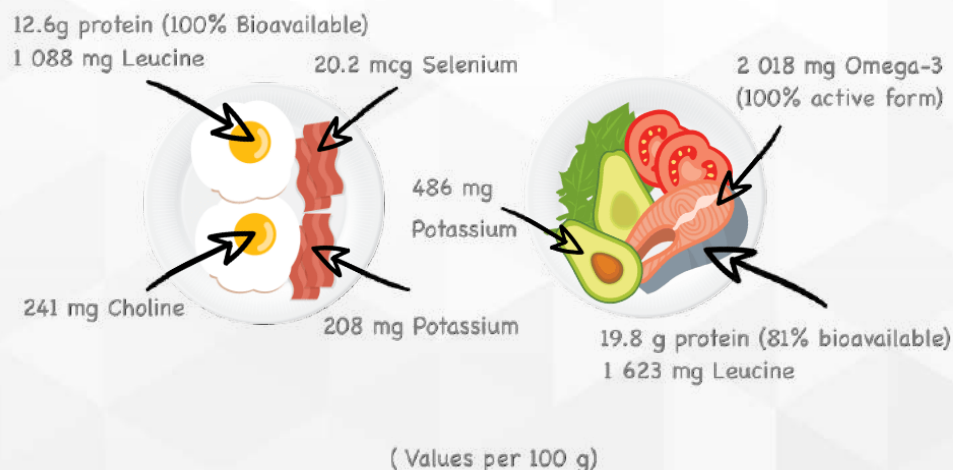
Try to buy whole, fresh foods, which should be the bulk of your diet – they might not even have a label. However, when you’re starting out with the ketogenic diet, learning a few examples of the calorie, carb, and fat content of the typical foods you’ll be eating is useful.

EXAMPLE 1:

Eggs (2% carbs / 35% protein / 63% fat) and Bacon (0% carbs / 11% protein / 59% fat)

EXAMPLE 2:

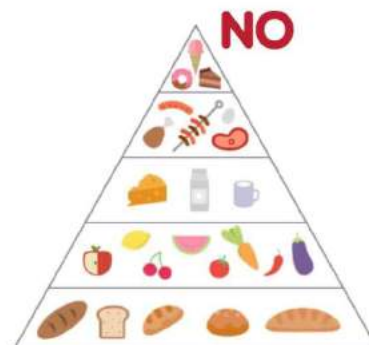
Salmon (0% carbs / 60% proteins / 40% fats), Avocado (19% carbs / 4% protein / 77% fat), Rocket lettuce (93% fiber), Tomatoes (70% carbs / 12% protein / 9% fat)



The idea is that you will eventually tune into your body and notice how much you eat according to your real hunger rather than your cravings for high-sugar foods (e.g. bananas, dates) and junk-foods (e.g. ice cream, pizza, donuts, “sports” bars).

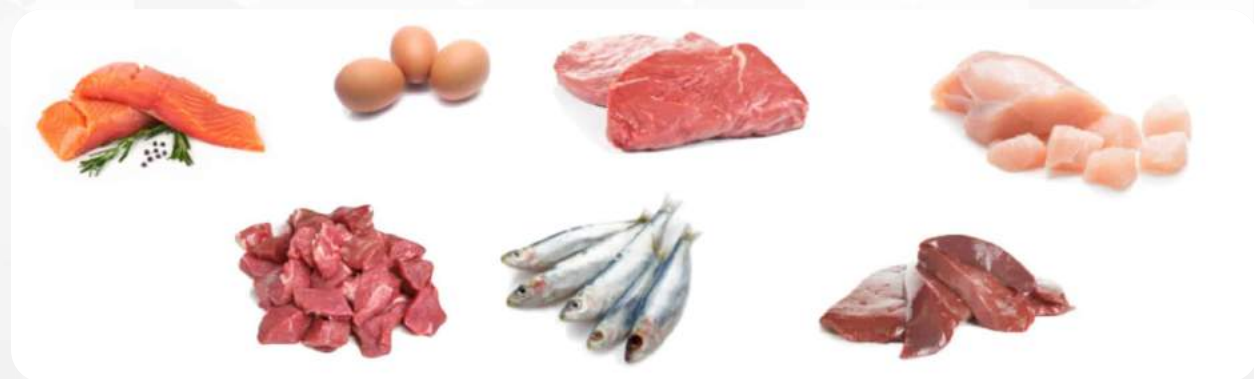
3. WHAT TO EAT ON KETO (AND WHAT TO AVOID)

There are millions of products on the market targeted at pretty much every type of diet you could think of. As the ketogenic diet has become increasingly popular, there are, of course, also products marketed to those who follow keto. Let's check what fit into the keto diet food list:



But for now, we're going to give you a run-down of what's keto-approved and what's not.

KETO ANIMAL FOODS



There are plenty of animal food options when following a ketogenic diet. These foods are typically thought of as the 'protein' in one's diet. It's true in the sense that you get the full range of essential amino acids from them, but they're more than that – you also get tons of vitamins, minerals, and essential fatty acids too.

To support local farmers and regenerative agriculture, try getting pasture-raised meats when possible. Healthwise, there might not be that big a difference between feedlot and pasture-raised animals. However, feedlot cows are given way too many antibiotics, so even if they don't show up in the meat to a significant degree, 'over-medicated' cows shouldn't be subsidized.

Importantly, rather than choosing lean cuts of meat, go for the fattier cuts — not only will they add flavor, but they'll help boost your fat intake! By this we mean darker cuts of poultry, ribeye, blade roasts, pork belly, or a high-fat content ground beef (e.g. 85/15 as opposed to 90/10). When it comes to animal protein, your options aren't limited. Here's a short list of some choices:

Animal food	Keto Score	Insulin Index
Chicken	8/10	32%
Lamb	9/10	11%
Beef	8/10	17%
Turkey	8/10	32%
Duck	8/10	26%
Pork	9/10	27%
Salmon	8/10	25%
Sardines	8/10	23%
Mackerel	8/10	25%
Halibut	9/10	37%
Oyster	7/10	38%
Mussels	6/10	38%
Beef Liver	8/10	36%

Be careful when buying cured meats and sausages, as they can often contain added sugar, fillers, emulsifiers and other additives of a suspect or unknown effect(s) — all things you want to avoid on the ketogenic diet, or any diet for that matter. As a responsible consumer, please do your best to buy animal-sourced foods from sustainable and ethical businesses (e.g. pasture raised pigs) rather than the typical and cruel industrial operations.

Protein shakes can also be a way of getting high-quality protein, but these don't impact appetite as normal whole food do, which can lead to higher intakes and ultimately reduce your blood ketones from their usual or desired level.

KETO VEGETABLES



When it comes to vegetables, your options are far from limited. Vegetables are a staple to the keto diet for anyone who enjoys them and suffers no plant-triggered digestive issues. And as long as they don't displace too many essential animal-sourced foods, they're fine. However, not all vegetables are created equal. It's important to have a rough estimate of the net carb count of vegetables and limit those that are on the higher end of the scale.

Need some ideas of what's good to consume? As a rule of thumb, stick to vegetables that are grown above ground, as their carb count is often significantly lower.

Vegetable	Keto Score	Insulin Index
Kale	7/10	37%
Spinach	7/10	30%
Romaine	8/10	21%
Chard	6/10	36%
Dandelion	6/10	36%
Arugula	7/10	31%
Watercress	6/10	39%
Peppers	7/10	37%

Celery	7/10	29%
Cucumber	7/10	34%
Zucchini	6/10	36%
Broccoli	6/10	39%
Cabbage	6/10	34%
Cauliflower	6/10	36%
Brussel sprouts	6/10	38%
Mushrooms white	6/10	42%
Green beans	6/10	38%
Bok choy	7/10	33%
Asparagus	7/10	28%
Radish	7/10	32%
Kohlrabi	7/10	29%
Onions	5/10	53%
Garlic	4/10	55%
Pumpkin	4/10	55%
Rutabaga	5/10	46%
Celeriac	5/10	47%
Turnip	6/10	44%
Carrot	6/10	42%
Ginger	5/10	51%

While keto limits, but doesn't exclude, the consumption of root vegetables, there are a few choices that make it easier to stay ketogenic. But remember, keep tabs on the net-carb count to ensure you stay within your limit.

With fruit, we have to be a little more cautious. Fruit contains natural sugars and is relatively high in carbohydrates with respect to its macronutrient composition.

However, a handful or two of berries won't be a problem for most people on a keto diet. But things like dates, bananas, and raisins are more concentrated sources of sugar and are much more likely to increase your insulin enough to lower your blood ketones below 0.3 – 0.5 mmol/L blood ketones (BhB).

KETO FRUIT



So keto does limit your choice of fruit somewhat. If fruit will be a part of your diet, it's best to stick to those with a low-glycemic score that will have minimal impact on insulin, as well as those that have very few net-carbs.

Here's a list of what's more keto friendly, especially if just starting out with this way of eating:

Fruit	Keto Score	Insulin Index
Blueberries	5/10	48%
Blackberries	7/10	24%
Raspberries	7/10	25%
Cranberries	7/10	34%
strawberries	6/10	40%
Gooseberries	7/10	34%
Coconut	9/10	7%
Lemon Slice	8/10	23%
Plum	5/10	51%

While following keto, it's best to avoid fruits with a high net-carb (and lower fiber count). The higher the net-carb count, the more likely you are surpass your daily carb threshold, which leaves less for the remainder of the day.

It's also important to avoid fruit juices, fruit concentrates, and dried/dehydrated fruit, as both the calorie count and sugar count (therefore net-carb count) is concentrated. While dried fruit may seem like a healthy snack option, the process of drying concentrates the sugars and gives them a higher carbohydrate count by weight.

KETO NUTS AND SEEDS



Nuts and seeds are a decent source of protein and a good source fat, but it's important to remember that they also have carbs.

Raw and organic give you the best chance of avoiding insecticides and fungicides, as well as any oxidized seed oils used to roast them.

Coconut flour and almond flour can be used as grain flour substitutes. They're especially good for gluten intolerant or people with Celiac disease. Unlike normal white or whole wheat flour, nut flours may need to be cooked differently. So check the recipe before wasting a batch of ingredients!

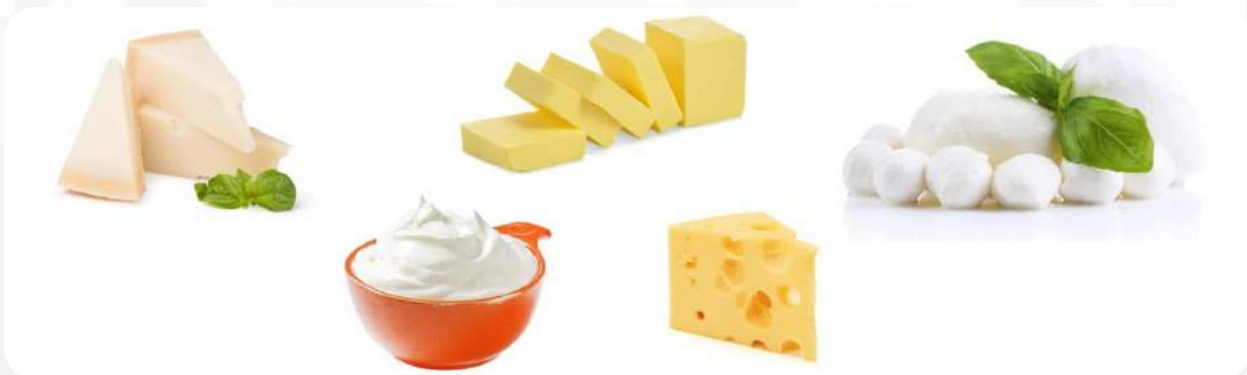
Keep in mind though, if you're dealing with inflammatory issues, you may want to avoid almond, chia, or flax seed products entirely. This is because the concentrating, grinding, and heating of PUFAs necessary to make flour seems to excessively oxidized the delicate oils.

When it comes to nuts and nut flours, they're not all low-carb. Here are your best options:

Nuts	Keto Score	Insulin Index
Macadamia	9/10	4%
Almond	9/10	10%
Peanuts	9/10	11%
Brazil	9/10	5%
Pecans	9/10	4%
Walnuts	9/10	8%
Pine	9/10	8%
Coconut Flour	9/10	14%

Next time you find a recipe that calls for a breading or a cup of a specific flour, don't worry! Even your favorite recipes and baked goods can be made keto by little substitutions and modifications.

KETO DAIRY



Dairy is one of those grey areas when it comes to paleo and primal, but it doesn't need to be. Paleo is shorthand for 'properly adapted to' and many people do fine with dairy, even though no caveman ever had any. So exclude it for a few weeks and reintroduce it to see if you're better off with or without it.

So assuming you tolerate dairy products well, go for it! Just don't make dairy a bigger part of your calories than your meat or fish intake. Try to buy full-fat and raw dairy. Finding raw dairy is much easier in Europe than the United States due to laws and restrictions. You also want to avoid low-fat or nonfat dairy products, as they are laden with additives to replace the fat. Stick to full-fat dairy to increase health benefits and satiety.

If you're going through a fat loss stall and you've never tried reducing or eliminate dairy for a few weeks, that's worth a try.

While not inclusive, here are some good options:

Diary	Keto Score	Insulin Index
Heavy Cream	10/10	4%
Ricotta	8/10	18%
Cottage Cheese	7/10	29%
Cream Cheese	9/10	9%
Mascarpone	10/10	4%
Fresh Mozzarella	9/10	13%
Goat	7/10	34%
Brie	9/10	11%
Blue	9/10	13%
Camembert	9/10	12%
Gouda	9/10	14%
Parmesan	8/10	18%
Feta	9/10	14%
Milk	7/10	38%

As fats will comprise a large portion of your diet, you'll want to figure out which are the best kinds to consume. Being keto doesn't mean you have to eat chunks of butter or drown yourself in coconut oil. There are plenty of ways fats can be incorporated into the diet — roasting, fat bombs, salad dressing, sauces, any way you'd like!

Fats are crucial to proper body function, but if sources of concentrated fat displace too many sources of fat from whole animal foods, then this can stop fat loss. In the ketogenic diet, we focus on a few main kinds of fat:

SATURATED

Despite everything you've probably heard about saturated fat, don't be afraid of it. You'll find it in food like meat and seafood, butter, lard, tallow, coconut products and dairy! All of these are good.

MONOUNSATURATED

Found in products like pork, beef, fish, olive oil, and of course olives, avocados, nuts and seeds, monounsaturated fats are also great for you so. Enjoy them!

POLYUNSATURATED

There's a difference between naturally occurring polyunsaturated fats found in meat, nuts and fruit versus the concentrated sources like seed oils (e.g. sunflower oil, soybean oil, peanut oil, linseed oil, and corn oil). Make sure you diligently avoid them.

TRANS FAT

These industrial fats are the product of processing and chemical alteration that renders them highly unhealthy. Naturally occurring ruminant-derived trans fats, however like CLA, are perfectly healthy.

The ketogenic diet, while part of it is about high-fat consumption, isn't just about loading up your plate with every type of fat you can find. It's important to recognize what types of fats are present in various foods, how much we're actually consuming, and getting a tasty range. This is especially true if you're looking to lower your excessive omega-6 intake from seed oils, thereby improving your omega-6 to omega-3 ratio.

In a typical diet, the ratios of these two fats are significantly skewed towards omega-6s. While both are necessary and play important signaling roles, omega-3 fats are anti-inflammatory precursors and the omega-6 are pro-inflammatory ones. An easy rule of thumb is 1. avoid seed oils, and 2. eat lots of fatty red meat and fatty sea creatures. This will improve your system's immune response now that you've removed sources of chronic inflammation.

Wondering what types of fat are good choices? Here are some for you:

- Olive oil
- Coconut oil
- Avocado oil
- Olives
- Nuts and seeds
- Low-PUFA nut butters
- Lard (preferably pastured)
- Tallow (preferably grass-fed)
- Duck fat
- MCT oil
- Ghee
- Butter
- Mayonnaise (made with high-quality avocado or olive oil)
- Avocado
- Egg yolks

Be careful with your choices for cooking, however. If you tend to use high heat, stick to fats and oils that have high smoke points like lard, ghee and coconut oil to avoid burning delicate fats.

SPICES

How do you make bland food taste good? It's all about the spices. With keto, there isn't much in the spice department that's off limits. Fresh or dried, both are great additions to any recipe.

Here are a few fresh herbs that are both delicious and pack both a flavor and nutritional punch:

- Parsley
- Cilantro
- Rosemary
- Thyme
- Sage
- Mint

Don't have fresh herbs on hand? Try these ones dried:

- Basil
- Cumin
- Coriander
- Cinnamon
- Oregano
- Allspice
- Nutmeg
- Curry
- Cayenne
- Chili
- Dill

Not interested in just dusting spices on your food? How about combining them with some olive oil and marinating your meat? Or throw them into a sauce to give your meal a flavor-packed saucy punch. The options are endless when it comes to how you can use them in different combinations.

Herbs and spices are nearly calorie and carb-free.

CONDIMENTS

This is one of the trickiest areas to navigate when going keto. Your standard condiments like ketchup, relish, BBQ sauce, and even some mustards are generally full of sugar and additives. While we're not saying eliminate them altogether, make sure you're checking the nutrition facts before you go wild.

Here are some sauces and condiments that might be safe for you:

- Mustard
- Horseradish
- Hot sauce
- Sauerkraut
- Mayonnaise (made with olive oil instead of seed oils)
- Soy sauce
- Salad dressings (full-fat, organic)

Better yet, why not try making your own condiments and sauces! For example, if you're looking for a topping for steak, why not try a beurre blanc, browned butter, or mustard butter sauce (garlic, mustard, and butter). Sauces and condiments don't have to be complicated or full of sugar. Sometimes simple is better.

Now that we've covered what is okay to eat on a ketogenic diet, we have to cover what's generally not okay.

Grains: These are a big no-no on a well-formulated keto diet and should be strictly avoided. Any wheat-based product like cereal, pastries, bread, and most sweets are full of carbohydrates and should be avoided. This includes whole grains and pseudo-grains like buckwheat, quinoa, rye, barley, oats, and the like.

Legumes: Just like grains, legumes are high in carbohydrates and should be avoided. They are more nutritious compared to grains but not compared to animal-sourced foods. This includes beans like chickpeas, black beans, lentils, kidney beans, and yes, even peanuts. If you have food sensitivities, avoid them. However, you may have a small side portion and still stay ketogenic if your high insulin sensitive, carry quite a bit of muscle mass, or just finished exercising hard.

Industrial seed oils: Often highly processed, industrial seeds oils should be strictly avoided whenever possible due to the risk of oxidation and rancidity.

Low-fat products: With a keto diet, our aim so to go high fat, so why would you want low-fat? Avoid these products as they're loaded with unhealthy additives to replace the fat and mess with your appetite regulation system.

Sugar: Strictly avoid sugar and especially products with added sugars. It's found in everything from juices and soda to sauces and cereals. If you're buying pre-packaged food, make sure you read the label to ensure there are no added or hidden sugars. If you want sweetness, then look for products containing natural sweeteners like xylitol, erythritol, or stevia instead. They may be suitable for you if you experience no additional cravings or digestive distress from their consumption. Once more, experiment!

Fruits: Despite being a natural, whole food, most fruits are bred to be sugar bombs. Opt for the low sugar options mentioned above like berries.

Starchy vegetables: This includes root vegetables like potatoes, yams, and sweet potatoes. Small occasional portions of moderately starchy vegetables like carrots and parsnips will allow you to stay ketogenic if you're not too insulin resistant (see vegetable section above).

Some people think eating keto is highly restrictive; it is in that you really have to restrict junk-food, but it isn't in that there are so many others options available (animal sourced foods, dairy, non-starchy vegetables, and some low-sugar fruit).

We've given you a rundown on what's keto and what's not. Let us tell you, we think the "eat these" list doesn't look so bad. Mix up your food combinations, add some spices and experiment! Keto doesn't have to be all about eating fat, especially not during the fat loss phase. Get creative with your meals and come up with new, exciting, and delicious ways to eat keto.

KETO VS. LOW-CARB



Keto and low-carb diets are often used interchangeably, but there's actually a difference between them.

As we mentioned earlier in this guide, ketosis is a metabolic state whereby the body burns fat for fuel and ketones are produced at a higher rate such that their blood levels are higher. Traveling through the blood, they're called upon to perform important signaling jobs as well as contribute to energy output (ATP). A low-carb diet, on the other hand, simply refers to eating a reduced carbohydrate diet; it doesn't involve as significant of a shift in one's basic metabolic state. It isn't necessarily better or worse, just different. It simply means that carbohydrate content is kept around a certain percentage for various reasons. Alternatively, avoiding carbs completely can also be called zero-carb (or carnivory).

Besides having a different metabolic effect, getting off carbs when going "low-carb" can often leave you feeling sluggish, tired, and just plain cranky because the body is still trying to use glucose as its energy source, even though you've taken it away and all that's really left is fat for fuel. When glucose and glycogen stores get too low for the body, which causes the body to flush out a lot of water along with electrolytes, that's when we may start to feel all the nasty side effects like irritability, decreased physical performance, cravings, and hormonal imbalances.

4. IS A VEGAN KETO DIET REALLY A THING?

If you haven't already guessed it, a vegan diet is very high in carbohydrates because the energy in plant foods mostly come from starch or sugar — think beans and legumes, fruit, root vegetables, etc. In order to satisfy certain nutritional requirements, like protein for example, the body needs what we call “a complete protein” — this is something that contains all of the essential amino acids in the appropriate amounts necessary for building protein and all the molecules your body needs. A vegan diet on its own cannot supply this, which is why we cannot recommend a vegetarian or vegan diet.

Animal sourced foods satisfy nutritional requirements. On a vegan diet, no plant-based food exists to fulfill that need for complete protein, nor the need for the essential fatty acid, DHA. To avoid the inherent micronutrient deficiencies of a vegetarian diet, it should include eggs and full-fat dairy. In other words, the only ‘plant-based’ diet even worth attempting should be an ovo-lacto-vegetarian diet. Even this one will benefit from targeted B12 and DHA supplementation with the aid and attentive eye of a knowledgeable health professional monitoring your bloodwork.

Taking chia seeds and pinto beans as an example, a combination many vegans think will give them ‘complete protein’. Chia seeds and pinto beans have very small amounts of methionine or glycine, and what's there isn't very bioavailable. However, you can find both of these essential amino acids in the correct amounts and more bioavailable in red meat or white fish. You won't get enough of those essential amino acids on a vegan diet and what's more you poorly absorb them, meaning they have a low biological value (BV).



But chia seeds and pinto beans are both very high in carbohydrates and therefore aren't keto. So is there such a thing as a vegan keto diet? The answer is yes, technically. But keep in mind that while a vegan diet is already hard to do while avoiding micronutrient deficiencies, a vegan keto diet is even harder. While the standard vegan diet is often high in carbohydrates, this isn't a possibility on the keto diet as doing so will prevent you from getting into ketosis.

Here are a few tips on foods to include and foods to avoid:

Avoid these foods:

- High-sugar fruit (mangos, bananas, oranges, pineapple, etc.)
- Sugar, especially concentrated sources (agave, maple syrup, molasses, etc.)
- Grains (wheat, barley, oats, rye, rice, etc.)
- High-starch root vegetables (sweet potatoes, yams, white potatoes, etc.)
- Legumes (chickpeas, lentils, black beans, kidney beans, etc.)

While it may seem that we've just eliminated a large chunk of a vegan diet, here are some foods you can eat when following vegan keto:

- Low-glycemic fruits (blackberries, blueberries, raspberries, etc.)
- Vegan meat substitutes (tofu, tempeh, etc. — note: watch out for processing on these, as most often they will be highly processed and aren't actually all that healthy)
- Fermented food (kimchi, sauerkraut, etc.)
- Healthy oils (olive, avocado, coconut, MCT, etc.)
- Nuts and seeds (almonds, brazil nuts, pecans, walnuts, sunflower seeds, pumpkin seeds, etc.)
- Avocados
- Vegetables (leafy greens, broccoli, cabbage, cauliflower, peppers, etc. — note: stick to any vegetables that are grown above ground as they have a much lower carb count than root vegetables)
- Full-fat dairy alternatives (coconut-based yogurts/milk, nut cheese, etc.)
- Mushrooms (shiitake, maitake, king oyster, oyster, etc.)
- Sweeteners (stevia, erythritol, monk fruit, etc.)
- Sea vegetables (dulse, nori, kelp, etc.)

In summary, if you go 'plant-based' keto, then go for a lacto-ovo-vegetarian diet in order to avoid serious nutrient deficiencies. What a mouthful!

5. KETO DIET BENEFITS

If you're new to keto, you've probably heard one of the most well-known benefits — keto is great for fat loss. And while that's true, that's not all it's great for.

KETO FOR WEIGHT LOSS

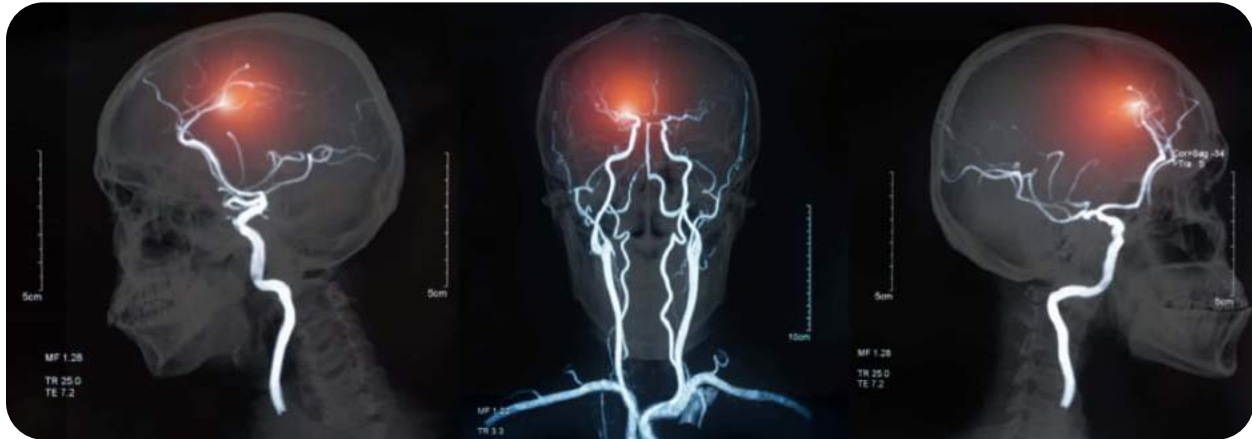


When following a ketogenic diet, the ultimate outcome is to put the body in a metabolic state whereby body fat is burned primarily instead of glucose. For individuals looking to lose weight (body fat), getting into the state of ketosis is a great way to do that. Studies have shown that, compared to a standard low-fat, calorie-restricted diet, the ketogenic diet is superior for both overall fat loss and maintaining muscle mass [1].

Other possible reasons for increased fat loss on a ketogenic diet are as follows [2]:

- Lower insulin secretion
- Improved insulin sensitivity
- Lower levels of inflammation
- Appetite suppression due to a higher satiety effect of protein and fat, which also regulate hunger hormones
- Increased lipolysis (fat breakdown)

POSSIBLE THERAPY FOR NEUROLOGICAL DISEASES



From Parkinson's and Alzheimer's to headaches and autism, while these disorders have significant differences characterizing them, one thing they have in common is abnormalities in cellular energy utilization. Studies have shown that the ketogenic diet can be beneficial in providing a neuroprotective effect. However, the exact mechanism(s) still remains unclear.

One mechanism that is suggested proposes that calorie restriction has neuroprotective effects, including improved mitochondrial function, decreased oxidative stress and apoptosis (cell death), and inhibition of pro-inflammatory markers like cytokines, TNF, and interleukins [3]. Another mechanism proposes that the ketogenic diet has protective effects to due to normalization of energy metabolism, whereby neurodegenerative disorders are linked to dysregulation of energy metabolism [4]. Another is that ketones, particularly beta-hydroxybutyrate (BhB), regulates your genes to cause a potent anti-inflammatory stimulus [5].

ATHLETIC PERFORMANCE



Carbohydrates have been the long-standing gold medal of fuelling athletic performance, but studies have recently shown running off a high fat diet is not inferior and, in some certain circumstances, possibly superior depending on the activity.

Why is this?

When the body runs nearly exclusively on carbohydrates, it can only store very small amounts of calories within the muscle and liver, lasting you a day or two. When an athlete is trying to perform, the body will burn through that stored energy pretty quickly, and once depleted, you're out of that 'rocket fuel'. But what about accessing that stored body fat? It can't happen if you're constantly carb-loading pre, during, or post-workout.

When the body is in a state of ketosis, however, it's fuelled by ketone bodies and fat, which means much more of the energy is derived from burning fat than from burning carbs. But ketogenic athletes can still burn glycogen even though ketones spare glycogen use. In this state, 'glycogen depletion' is pushed back a little and therefore the body essentially learns to rely more on fat.

It's still an open, debated question as to whether ketogenic athletes retain the same sprint or explosive capacity of traditional carb-loading athletes. Some people suggest a 'train low, race high' approach, which requires being low-carb or ketogenic most of the time and strategically using carbs on game day. This might be a viable option too – so experiment and see what works for you!

As far as your cells are concerned, fat also burns cleaner than carbohydrates do. So the more you're going to put your body through, the more careful you should be as to what your fuel of choice will be – predominantly carbs or predominantly fat?

However, it's important to note that some athletes aren't focused on health but primarily performance. Consequently, they might choose to not go keto but low-carb instead, or not even low-carb but more Paleo. That's fine! Studies so far have focused on keto for endurance sports, like running and cycling, but much less so for those like soccer, Crossfit or olympic sprinting. If you are a high-intensity athlete going low-carb or ketogenic, plan on taking weeks or months to adapt. Alternatively, cyclical ketosis, where you're consuming carbohydrates according to a schedule, may be more beneficial for your situation.

OPTIMAL BRAIN FUEL

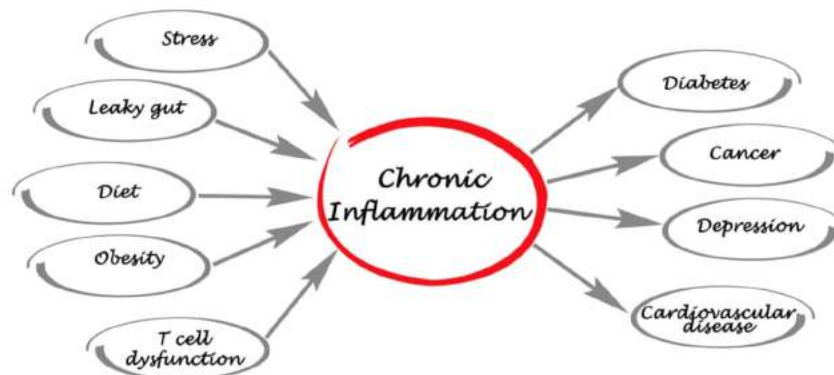


Our brains are happy to run on a mix of fat, glucose, and ketone bodies. Beta-hydroxybutyrate (BHB), one of the major ketones produced in the body, has the capacity to reduce our brains' energy needs down to about $\frac{1}{3}$! This is arguably a situation our brain prefers given its delicate fats and high metabolic rate. The brain also absorbs ketones well because they are able to cross the blood-brain barrier rapidly. This quick absorption helps to [6]:

- Improve memory, focus, learning, and attention through preserving various brains cells
- Regulate free radical production appropriately
- Reduce inflammation
- Protect against TBI (traumatic brain injury)
- Decrease risk of dementia

Ketones, specifically BHB, also helps to protect the central nervous system by preserving cells called ramified microglia, which are found in the brain and spinal cord and act to protect neurons [7].

LESS CHRONIC INFLAMMATION



When following a ketogenic diet, sugar levels decrease drastically, which is important to reduce levels of inflammation in the body. Why? Because excess sugar causes several different negative outcomes in the body:

- Excessive insulin secretion
- Gut dysbiosis [12]
- Increases inflammatory markers in body (cytokines, C-reactive protein, TNF-alpha, etc.) [13]
- Excessive free radicals [14]
- Triggers onset and development of metabolic syndrome [15]

By reducing sugar (and starch) intake, insulin levels remain low and the body doesn't experience the surge in insulin after consuming carbohydrates that cause inflammation.

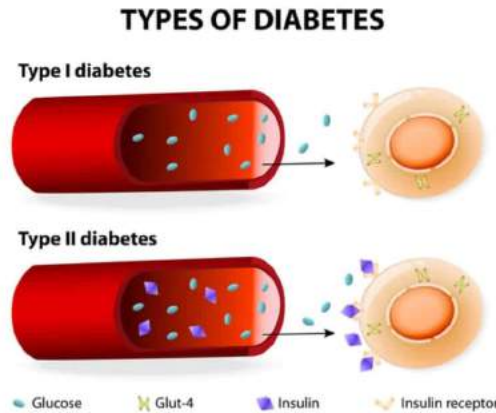
LOWER RISK OF HEART DISEASE



Dyslipidemia, a disorder characterized by abnormal blood lipid levels (unusually high), is a well-known marker, but not a cause, of cardiovascular disease. Studies have shown that following the ketogenic diet can be beneficial for blood lipid profiles. This includes decreasing triglyceride levels and increasing HDL levels. Sometimes the overall size of LDL particles improves, but this is up for debate as to how often it happens and whether or not it matters [16, 17].

Well-formulated ketogenic diets will decrease CVD risk when they remove sugars, flour, and seed oils, which together are the main source of risk besides non-dietary factors like smoking.

REVERSING TYPE 2 DIABETES AND MANAGING TYPE 1 DIABETES



Insulin resistance is the underlying factor in type 2 diabetes, and multiple studies have shown the ketogenic diet to be beneficial in reversing the diagnosis. This is because people exhibiting insulin resistance, when ingesting carbohydrates, lose their ability to control the entry and exit of fat from their fat tissue.

This eventually leads to dangerous fat accumulation in the liver, pancreas, and other areas where fat should not be accumulating (large visceral fat deposits). When carbohydrate intake is severely restricted, as with the ketogenic diet, the level of carbs that can be converted to fat also decrease and your fat tissue becomes more normally regulated. So insulin resistance signs and symptoms improve drastically or disappear completely [18].

The ketogenic diet is very effective at lowering blood glucose and therefore helps to improve glycemic control, which is traditionally measured by fasting glucose and HbA1c [19]. There are better, more modern measures out there, like data from a continuous-glucose monitor (CGM) or a clinical oral glucose tolerance test (OGTT), taken alongside insulin measures. You can also check out an estimate of insulin resistance with our McAuley index calculator (coming soon!) if you have you know your fasting insulin and fasting triglyceride values.

The results were similar for using keto to treat type 1 diabetes. A study showed that using a very-low carbohydrate diet was beneficial for regulating glucose control in subjects with type 1 diabetes [20].

6. WHAT CAN YOU EXPECT WHEN STARTING KETO?

As with starting any diet or lifestyle, where there are upsides, there are also downsides. The same applies to keto. While some individuals may transition into ketosis pretty smoothly, unfortunately, that's not the case for everyone. We've outlined a few precautions you should know about and may experience when changing your diet and lifestyle.

KETO FLU (AKA CARBOHYDRATE WITHDRAWAL)

The flu is never something you want to catch, but the 'keto flu' is a little different than the one you're used to.

Probably one of the most common reasons why people discontinue keto, the keto flu is a variety of symptoms experienced due to withdrawal from carbohydrates. The severity of symptoms varies from person to person, of course, but some of the common symptoms you may experience include:

- Low energy
- Weakness
- Lack of concentration
- Nausea
- Headaches
- Irritability
- Insomnia

If you've been on a relatively high carbohydrate diet, you may experience more severe symptoms than someone who has turned keto after following a moderate level carbohydrate diet.

Despite how unpleasant this may seem, there are things you can do to avoid the keto flu. If you're interested to learn more, check out our extensive keto flu article [here](#)

WHAT ABOUT NUTRIENT DEFICIENCIES?

Most diets increase the risk of nutrient deficiencies. However, despite seeming highly restrictive, a well-formulated ketogenic diet provides everything you need. It typically contains a wide variety of animal-sourced foods, vegetables, nuts, and a little low-sugar fruit. If you opt for a carnivorous ketogenic diet, you can stay well nourished too. Whatever the case, keep an eye on minerals like magnesium and potassium and don't hesitate to supplement magnesium citrate or potassium citrate in the early phases of adopting this new way of eating.

But our mobile app Nutrita provides you with the grounds for a well-formulated ketogenic diet so you don't have to worry about nutrient deficiencies.

WHAT ABOUT VITAMIN C ON KETO

Vitamin C is an essential dietary micronutrient with important roles. It maintains basic tissue structure and provides antioxidant action. However, depending on your health and the diet you follow, you may need to get very different amounts.

It's not only about how much vitamin c you get but also about how little you need.

The requirement for vitamin C on a ketogenic diet is probably much lower than on a higher carbohydrate diet. 10 mg a day of vitamin C was determined to prevent scurvy in the context of someone eat a high-carb diet [\[21\]](#).

On a ketogenic diet, that figure is not known but it is likely quite a bit lower. The reason why is that glucose and vitamin C compete for the same receptor (GLUT1) to be taken up into cells [\[22\]](#).

The less glucose in the blood, the easier it is for cells to take up vitamin C.

Ketogenic diets are better than high carb diets to normalize blood sugars [\[23\]](#). Another reason is that other antioxidants our uses like glutathione and uric acid get upregulated when our cells use less glucose and more fat or ketones to power us [\[24,25,26\]](#).

Importantly, the ketogenic diet is known to decrease overall oxidative stress which spares the activity of antioxidants such as vitamin C

ATHLETIC PERFORMANCE

If your body is used to burning carbohydrates for energy, your athletic performance may suffer during the initial stages of adaptation. This is because when your body is still relying on carbohydrates (glucose) for fuel and there is minimal being consumed, it has to work a bit harder to produce sufficient energy — it's what we term, the 'keto flu', as we just talked about.

During this transition period, it's likely that you will experience lower power output, muscle weakness, and fatigue — all things that will decrease your athletic performance.

But good news, it's not permanent. Once you overcome the initial adaptation hump, your performance should be back to normal (if not better!).

SIDE EFFECTS OF ENTERING KETOSIS

Let us warn you, the initial stages of becoming 'fat-adapted' can be a nuisance or even really difficult for a minority people. Here are some side effects you might experience when going keto:

- Frequent urination
- Dizziness
- Drowsiness
- Cravings
- Constipation
- Diarrhea
- Muscle cramps
- Flu-like symptoms ('keto-flu')
- Sleep issues
- 'Fruity' breath
- Heartbeat abnormalities (palpitations)

The symptoms we've mentioned are just some of what you may experience. Everyone adapts to ketosis differently and therefore will experience different symptoms when making that transition. They are, however, temporary and will likely disappear once your body goes into ketosis.

SHOULD YOU TRY KETO?

Not everyone must do the ketogenic diet. Nearly no one cannot do the ketogenic diet. Maybe a good old low-carb (but non-ketogenic) diet will suit you better. Or a carnivore one might! Who knows until you experiment. That being said, here's a list of people who should be cautious when trying out keto and should let their doctor know what they're embarking on; this is to ensure any medication adjustments that are necessary do get made.

- People with hyperchylomicronemia
- Anyone taking medications — consult your doctor for possible interactions
- Pregnant or breastfeeding women should talk to their doctor (but a well-formulated ketogenic diet isn't bad for pregnant women per se)
- Anyone who has previously struggled with an eating disorder
- Anyone with severe nutritional deficiencies (make sure the diet helps & doesn't hinder the pre-existing issue)
- Anyone with a rare disease where fat burning metabolism is compromised
- People with fat malabsorption (but even without a gallbladder you can do keto just fine!)
- Diabetes type I or II, but only because eventual blood sugar and blood pressure lowering medication dosages will need to be adjusted (decreased and eventually discarded)

If you have a pre-existing condition that you think may be impacted by keto, always consult your doctor or medical professional first to ensure your health and safety.

WHAT ABOUT EXOGENOUS KETONES? (KETONE SUPPLEMENTS)

Exogenous ketones are pretty popular when it comes to the keto market, but are they really worth it? As we mentioned earlier, ketones supply an alternate source of fuel for the brain and body when glucose is in short supply. The body can use two sources of ketones — endogenous, which are produced internally, and exogenous, which are supplied from an external source.

For some, getting into ketosis is a breeze. But for others, it can be downright miserable. When our bodies are in ketosis, however, we produce ketones, namely BHB. And this is what brings us to exogenous ketones. When we take these sorts of products, we are essentially putting ketones directly into the blood, therefore bypassing the conversion process from fat and putting us into ketosis quicker.

But before you go thinking you can stick with your original diet and just add exogenous ketones, it's not that simple. Exogenous ketones are used as a compliment to a ketogenic diet and are used to provide greater support and increase the benefits of a keto diet.

So who should you use exogenous ketones?

PEOPLE WITH THERAPEUTIC NEEDS

Some patients with cancer, epilepsy, Alzheimer's, Parkinson's, and other neurodegenerative diseases may find exogenous ketones a useful adjunct to their primary therapy. This is because the depth of ketosis is crucial factor in metabolism, something which seems to go awry in these diseases [[28](#), [29](#), [30](#), [31](#), [32](#)]. We're still in the early days of exploring exogenous ketones as medical therapies, so always consult with your physician in these situations.

ATHLETES

Glucose gels aren't the only option nowadays when it comes to getting an energy hit mid-workout. Many athletes will want to experiment with exogenous ketones (the salts, the esters...), but in truth, it's still early days when it comes to their effectiveness. That being the case, athletes should realize that their baseline diet and how they sleep still matter more than their exogenous ketone regimen, or any other supplement for that matter. Nevertheless, exogenous ketones may still be an interesting tool for in one's performance toolbox.

The results on exogenous ketones for athletes are mixed [33, 33, 34]. Some argue that ketones reduce reliance on carbohydrates at low intensities, which increases carbohydrate availability at higher intensities (where they're critically needed), thus producing a net performance benefit. Others say that what you may gain from exogenous ketones at a lower intensity, you will lose in terms of your ability to burn carbs at high intensities, resulting in a net loss in performance.

So far it seems that combining exogenous ketones with a carbohydrate supplement may be advantageous compared to place and carb supplements alone [35]. This is still an open question, but the evidence so far suggests that there will be smart and not so smart ways to use these supplements for athletic performance.

DON'T CHEAT (BUT IF YOU DO, UNDERSTAND WHAT YOU'RE MISSING OUT ON)

The worst part about going keto is having to experience the keto flu. With exogenous ketones, however, you can 'skip' the adaptation phase your body usually embarks on so that it can learn to make ketones itself. This phase is physiologically very valuable. The exogenous ketones might lower the number and severity of symptoms you experience. But keep in mind, exogenous ketones won't get rid of the keto flu for you, it may just minimize some of the effects your experience (and even that's debatable).

If you're new to the ketogenic diet, exogenous ketones may benefit as an experiment. However, they're not a free pass to getting into ketosis. You can't rely on them and skip all of the hard work. If you choose to use exogenous ketones, be cautious, and remember, getting into ketosis through a well-formulated diet is a better way to exploit any performance boost exogenous ketones may bring you.

CONCLUSION

Whether you're struggling with health problems, want to drop a few pounds, or simply just want to feel amazing, the ketogenic diet can help you do that. While some say it's restrictive or difficult to follow, there is an abundance of fresh, whole, and healthy foods available for you to eat.

Following keto doesn't have to be restrictive and doesn't have to be difficult. With Nutrita, we are here for you at every stage, whether you're just beginning or are a seasoned keto follower. We provide you with all the resources and support needed on your keto journey, from our in-app guidelines to our online community. Stick with Nutrita and find out how fabulous you can feel.

Not convinced? Even before you start the diet, simply scan a bar-coded product or search for the food in our database to see if it's both keto friendly and nutrient dense. You'll quickly see that ketogenic diets can be quite varied. Nutrita makes it much easier to stay keto while navigating a world full of fast-food and hidden ingredients.