How to Eat Well During an Orthodox Lent

by Chris Masterjohn, PhD

In loving memory of my grandfather, Ralph Masterjohn.
October 23, 1923 — February 10, 2018

My grandfather passed away at the age of 94 in the late hours of February 10, the day before Orthodox Christians gave up eating meat in the run-in period leading to Lent, which officially started on February 19, Clean Monday. My grandpa lived and died for faith in Christ as preserved in the Orthodox Christian tradition, so I've decided to honor him by writing something that many people have been asking me to write for years: advice on how to eat healthily during Lent.

This is the printable version of an online article. You can find the web version at chrismasterjohnphd.com/lent.

The web version is rich in clickable links, so I recommend heading back to the web version if you want to click through the links to other articles or to food products that I recommend.

In this article, you will find the following:

Spiritual Disclaimer

My expertise is in nutrition, and this article is about how to get good nutrition. Please don't consider any of this to be spiritual advice. Generally within Orthodoxy, it is believed that you should discuss your fasting regimen from a spiritual perspective with your priest, or with your

spiritual father if you have one other than your parish priest. This is especially true if you are a pregnant or nursing woman, a child, elderly, sick or injured, or have medical requirements for certain dietary restrictions, in which case you would not be expected to fully comply with the fasting guidelines. It is also especially true if you do not fall into any of these categories yet wish to modify how you approach the fast from the norm. If I say something like “ask for a blessing to eat fish,” I’m just assuming this practice as the norm, not giving out advice about when to talk to your spiritual father and when to ask for a blessing. Similarly, the norms of your local community or the advice of your spiritual father may differ on what to fast from by default, and you should consult these sources before implementing anything in my description of the fasting practices.

Nutritional and Medical Disclaimer

In this article, I describe what I believe would best cover the nutritional needs of most people. You are a unique individual, and your needs may differ from the average. Let your doctor know when embarking on any new dietary approach to make sure you do not have any medical reasons that should hold you back. When possible, seek personalized advice from a properly certified dietitian or nutritionist. Please treat this article as educational in nature and not as a form of or substitute for professional medical or nutritional advice.

Healthy Eating Without Lenten Fasting

I’d like to start out by describing some guidelines for healthy eating without any restrictions, since this will make it clearer what could be missing when putting together a Lenten diet.

For someone with no allergies or other reasons to restrict food groups, the following principles help ensure that you’re meeting all your nutritional needs:

- **Diversify your protein among meat, fish, shellfish or other invertebrates, eggs, and dairy.** Get a half gram to a gram of protein per pound of bodyweight (if overweight, reduce this to your ideal bodyweight), which for a 150-pound person would be 75-150 grams of protein. Most people have plenty of wiggle room within this range, but if you are trying to lose body fat, gain muscle, or meet athletic goals, you should aim for the higher side of the range. The diversification helps you take advantage of the different vitamin, mineral, and fatty acid profiles of the different foods, and keeping your protein up to this amount supports a healthy body composition, which protects you from diabetes and other chronic diseases, keeps your bones strong, and prevents you from losing vitality and suffering from injuries as you age.

- **Make an effort to eat “nose to tail” by utilizing parts of the animals we’ve been neglecting in our society.** For example, try eating liver once a week and using bones to make broths, gravies, and sauces or eating the edible bones found in canned fish.

Liver is incredibly rich in many nutrients but is especially rich in vitamin A, which keeps your eyes moist and protects them from getting irritated or scratched, supports your ability to see well at night, helps maintain a healthy sleeping rhythm, and keeps you from getting sick.

Bones are an important part of this approach because of their amino acids, which are the building blocks that make up proteins. Bones are very rich in the amino acid glycine. Glycine prevents wear and tear on your tissues as you age, supports your skin and bones, keeps you calm and less distracted, supports healthy sleep, helps rid your body of toxins, and leads to a long, healthy life. Eggs, dairy, meat, poultry, and fish are all rich in another amino acid, methionine, which depletes glycine. Balancing these foods with bones helps restore the natural balance of these two amino acids.

- **Get about 1000 milligrams of calcium per day,** which is easiest to get from several daily servings of dairy or edible bones, such as the ones found in canned fish. Calcium is critical to maintaining healthy bones and teeth.

- **Diversify your carbohydrates among legumes, whole grains, starchy tubers, and fruits.** Each of these foods has a different profile of vitamins and minerals. If you diversify, you'll get everything you need. If you put too heavy an emphasis on one category (for example, eating bread, pasta, and other flour products to supply most of your carbohydrate) you will miss out on key nutrients.

- **Eat a large volume (several cups per day) of vegetables, diversifying them across colors with an emphasis on red, orange, yellow, and green. Always include dark green vegetables in the daily mix.** Vegetables give you a high nutrient-to-calorie ratio, allowing you to get far more nutrients into your diet without eating too much food. The colors signify different nutrients. For example, green signifies vitamin K, and all four colors signify vitamin A. The colors may also signify unique plant substances that have important health effects. For example, lutein is a yellow pigment that protects your eyes from damage induced by ultraviolet light, and lycopene is a red pigment that researchers are currently studying for its potential to prevent prostate cancer.

- **Include foods or supplements that aid in digestion at every meal.** Examples include ginger, lacto-fermented vegetables, kombucha, raw apple cider vinegar, Swedish bitters, and digestive enzyme supplements. The reasoning behind this one is simple: all those nutrient in your food are only useful if you digest your food well, breaking it down fully and absorbing everything it has to offer.

Much more could be said about this, especially when tailoring a diet to specific individuals, but I believe these six principles offer a very simple, easy framework to use to maximize the probability that you are getting all of the nutrients you need.

Now let's take a look at the dietary restrictions of an Orthodox Lent to see how they alter these principles.

The Restrictions of Lenten Fasting

The periodic and intermittent dietary restrictions of the Orthodox Church are referred to as degrees of "fasting," even though that word in the modern vernacular usually refers to complete abstinence from food. Most healthy adults are invited to follow the restrictions of Lenten fasting as strictly as they can. Children, pregnant and nursing women, the elderly, and those burdened with illness or injury are expected to follow them less strictly if at all. There are small variations in fasting practices among different communities within the Orthodox Church, but they generally fall into five levels of strictness:

- **Exclusion of meat and poultry,** but the allowance of fish, dairy, eggs, invertebrates such as snails and shellfish, alcoholic beverages, and oils. For example, this is the level of fasting in the week leading up to the beginning of Lent.

- **Exclusion of meat, poultry, dairy, and eggs,** but allowance of fish, invertebrates, alcoholic beverages, and oils. This is the level of fasting on some feasts that fall within Lent, such as Annunciation, and in some traditions Palm Sunday. This is also the level of fasting held during much of the fast leading up to Christmas.

- **Exclusion of meat, poultry, dairy, eggs, and fish,** but allowance of invertebrates, alcoholic beverages, and oils. This is the level of fasting held on Saturdays and Sundays during Lent.

- **Exclusion of meat, poultry, dairy, eggs, fish, alcoholic beverages, and oils,** but allowance of invertebrates. This is the level of fasting held on most weekdays during Lent. The rules as originally written in the oldest texts refer to wine and olive oil, and different communities have interpreted this differently to mean wine and olive oil specifically or to mean alcohol and oil broadly, and various permutations in between. I believe the intent is alcohol and oil broadly. Regardless, abstaining from alcohol and oil broadly during the week is healthier than the narrow interpretation for reasons I will explain below in the "What to Eat During Lent" section. Some people maintain that shellfish should be abstained from during weekdays, but when I researched this I could not find any support for classing any invertebrates among the foods abstained during any period, except for people observing strict xerophagy, described below. A liberal approach to shellfish, allowing it through the week, is more consistent with historical fasting practices and, for reasons explained below in "What to Eat During Lent," is the healthier option.

- **Xerophagy** literally means “dry foods,” and in its strictest form it means eating one meal per day of bread and water. This is the strictest interpretation of how to eat during most weekdays during Lent, but it is generally observed only in pieces. For example, a large number of people abstain from alcoholic drinks and cooking oils, and the abstention from oil makes the food “dry,” but they eat plenty of things besides bread. Many people, especially in monasteries, observe one meal a day (which we would call in the modern vernacular “intermittent fasting”), but still eat plenty of things besides bread, often including invertebrates. In the early days of the Russian mission to Alaska, the Alaskan natives put a lot of emphasis on eating one meal a day because abstaining from fish was infeasible, so they observed the intermittent fasting rule while simultaneously eating fish, otherwise only eaten during Lent on select feast days.

In addition, there are some days in the first week of Lent and during Holy Week where some people completely abstain from food.

Now that it’s becoming more popular to eat crickets, in the form of cricket flour or Exo Bars, some might wonder where these fall in. Most people who write fasting guidelines refer only to “shellfish,” which is a culinary term referring to aquatic invertebrates. It is clear, though, that in practice terrestrial invertebrates are treated the same as aquatic invertebrates. On the island of Crete, for example, snails are considered fair game during all fast days throughout the year. In my research I’ve found nothing but silence on the topic of insects, and I can only assume that, as terrestrial invertebrates, they should be treated like snails. This makes them allowed throughout the year and potentially an important source of protein.

Now let’s take a look at how this change in eating patterns can impact the healthiness of your diet, and what to do to manage it. In each section below I consider the nutrients that might be most difficult to get during Lent, and how to obtain them. Then I end by looking at some examples of how you might put together a complete Lenten diet in a way that ensures good nutrition.

Nutrients That Are Difficult to Get During Lent

The following nutrients are more difficult to get during Lent and deserve special attention:

- **Protein.** Eating less meat, fish, poultry, dairy, and eggs makes it more difficult to get enough protein. This requires us to focus more on the animal foods that are allowed during Lent (invertebrates like snails, crickets, and shellfish) and on the plant foods richest in protein (mainly pulses, which include lentils, peas, and beans). Thankfully, both invertebrates and plant foods supply a better balance of methionine and glycine than the animal foods we fast from during Lent, allowing us to forgo eating or using bones without

a problem.

- **Vitamin A.** Vitamin A comes in two forms. In red, orange, yellow, and green vegetables, vitamin A occurs as provitamin A carotenoids such as beta-carotene. In animal foods, vitamin A occurs as retinol. The form of vitamin A that we need in our bodies to be healthy is retinol. The reason carotenoids serve as vitamin A is because we can convert them to retinol. But for many reasons — genetics, digestive health, status of other nutrients, hormone balance — some of us do not perform this conversion well, and we rely more heavily on animal-based vitamin A. People who eat four ounces of liver once a week obtain all the vitamin A they need from this alone. Most people these days do not eat liver, and for them dairy and egg yolks may provide a third to a half of their daily vitamin A. Shellfish provide some vitamin A, but not as much as these other foods. During Lent, animal-based vitamin A is scarce, requiring us to get what we can from shellfish, and to double down on the vitamin A we have free access to in colorful plants. Red palm oil is an especially great plant source of vitamin A because its carotenoids are much easier to absorb than those in vegetables and is featured in the section on supercharging your nutrition.

- **Zinc.** Zinc supports healthy skin and hair, prevents acne, keeps you from getting sick, helps balance your hormones, stabilizes your blood sugar, and helps you hold on to your lean muscle mass. In the modern American diet, the best sources of zinc are beef and cheese. Overall, animal foods are much richer in zinc than plant foods, and the zinc in animal foods is much more absorbable than the zinc in plant foods. In fact, whole grains, nuts, seeds, and pulses all inhibit the absorption of zinc. This means that a cheeseburger is a great source of zinc, as long as it isn't served on a whole wheat bun! Thankfully, there is one source of zinc that blows beef and cheese out of the water: oysters. And oysters are allowed during Lent. Furthermore, techniques such as soaking, sprouting, and fermenting reduce the substances in whole grains, nuts, seeds, and pulses that inhibit zinc absorption. Thus, by putting a special emphasis on oysters and proper preparation of plant foods we can get plenty of zinc during Lent.

- **Calcium.** The Lenten diet excludes the milk and bones, the two richest sources of calcium. This makes us more reliant on plant foods for calcium during Lent. Estimating whether you are getting enough calcium from plant foods is more difficult than it first appears. Calcium is very poorly absorbed from some plants. For example, we only absorb 5% of the calcium from spinach and only 9% from rhubarb. It is very easily absorbed from other plants. For example, we absorb 50% from kale and 60% from broccoli. Yet others are in between. The absorption from nuts, seeds, and pulses, for example, is about 20%. To put these figures in perspective, the absorption from pasteurized milk is a little over 30%. In my recommendations below, I took into account the calcium content, the percentage absorption, and the caloric load of different Lenten foods and concluded that chia seeds, certain tofus, and cruciferous vegetables are the best sources. I list the specific amounts of each food you would need to eat to make it

easier to put together a food plan that supplies enough calcium. Some foods are fortified with calcium (check the label to make sure), such as orange juice, cashew milk, rice milk, almond milk, and soy milk. If you consume these foods already, you may have your calcium covered. However, I don't recommend adding them to your diet to get calcium. If natural foods are infeasible for you, a calcium supplement gives you more dietary freedom and accomplishes the same result as a fortified food.

- **Vitamin B12.** Vitamin B12 helps stabilize your mood and prevents anxiety and depression, prevents anemia, protects against cardiovascular disease, and works with other nutrients to prevent fatty liver disease. Its deficiency can cause irreversible degeneration of your nervous system. Outside of Lent, most people meet their vitamin B12 requirement by consuming three servings per day of meat, poultry, fish, or dairy. Plant foods do not contain any B12 at all. Certain specific mushrooms (shiitake, chanterelle, and black trumpet) and algae (chlorella and nori) may contain B12, but the consistency and reliability of their B12 content is unclear. Among Lenten foods, the only reliable sources of B12 are invertebrates. Among invertebrates, oysters stand out as excellent and clams stand out as stupendous. Emphasizing these two foods during Lent will offer strong protection against B12 deficiency.

- **Vitamin K2.** Like vitamin A, vitamin K comes in two forms. Dark green vegetables contain vitamin K1 while animal foods contain vitamin K2. Fermented foods, regardless of whether they come from animals or plants, also contain K2. K1 supports blood clotting, which makes it important to prevent excessive bruising, or, in the case of injury, excess blood loss. K2, by contrast, is used mainly for a host of other beneficial effects, such as bone and dental health, kidney and heart health, exercise performance, sexual health, and cancer protection. Most people get most of their K2 from egg yolks and cheese, foods that aren't eaten during Lent. As with carotenoids, we have the ability to convert K1 to K2, but some of us are better at it than others and none of us really know how good we are. Thus, placing emphasis on dark greens will give you some of the benefits of K2, but it is more reliable to eat K2 directly. Thankfully, the best source of K2 out of all foods known to man is natto, a fermented soy food common in Eastern Japan. It smells funny, and it makes everything it touches gooey and sticky, but it's completely Lenten. My main recommendations below emphasize dark greens for vitamin K, but the special recommendations for supercharging your nutrition emphasize natto.

- **Choline.** Choline prevents fatty liver disease, which afflicts approximately 70 million Americans. It also supports mental health, supporting performance at tasks requiring extended focus, protecting against age-related memory loss, and likely protecting against anxiety and depression as well. In pregnant women, it prevents birth defects. Egg yolks are choline superfoods. Two or three of them per day can fulfill all your choline needs. Diets low in fat and high in folate, a B vitamin found most abundantly in pulses and dark green vegetables, lower the need for choline. Thus, while the Lenten diet is lower in choline for its lack of egg yolks, its low oil content during the weekdays and its

high pulse and veggie content throughout the week reduce the need for choline. Nevertheless, since there are a few Lenten options that are almost as supercharged with choline as eggs are — beets, wheat germ, and lecithin — these are listed in the section on supercharging your nutrition.

Is This Really That Important?

At this point, you may have two questions:

- Can't I eat less of these nutrients for a mere 40 days without much harm?
- Can't I just take supplements?

If these questions interest you, please see my answers in the appendix on page 18 for the first one and page 21 for the second.

If you're already convinced that it is important to arrange your diet so that you meet your needs for these nutrients from natural foods, you can simply keep reading.

What to Eat During Lent

Here are some simple rules to follow during Lent to ensure good nutrition:

- **At each meal, include a cup of cooked pulses, or four ounces of invertebrates or both.** Following this rule helps ensure you get enough protein, which is more difficult to get when you restrict meat, poultry, fish, eggs, and dairy. Here is a list of pulses. Foods like lentils, peas, and most things you would call "beans" that you'd consider part of a meal (like kidney beans and baked beans, but not vanilla beans or coffee beans) are pulses. Soybeans are pulses, and traditional soy foods such as tofu and tempeh can be part of this mix. Fake meats made from isolated soy protein, however, are not healthy or nutritious and should be avoided. Edible invertebrates include oysters, clams, mussels, scallops, octopus, cuttlefish, whelks (sea snails), squid, shrimp, lobster, crab, snails, and crickets.

- **Eat oysters and clams *at least* once a week *each*.** Oysters are an important source of zinc and clams are an important source of vitamin B12, both of which are harder to obtain on a plant-based diet than on an animal-based diet.

- **Consume two or three of the following every day:** 5 tablespoons of chia seeds (if you grind them; 10 tablespoons if you do not); 6 ounces of House Foods brand firm,

extra-firm, or super-firm tofu; 1 cup of turnip greens; 1.15 cups of bok choy; 1.3 cups of mustard greens; 1.6 cups of kale; 2.2 cups of rutabaga; 2.25 cups of broccoli; 3.6 cups of watercress; 3.6 cups of kohlrabi; or one capsule of calcium citrate taken at the end of your meal. For the vegetables, the measurements refer to the volume after cooking.

Each of these foods provides approximately the amount of calcium you would get from a glass of milk, and the supplement gives you a backup for whenever you have difficulty meeting your goal from foods alone. You can also meet your calcium needs mainly through the supplement if you would have difficulty incorporating these foods into your diet. For the best absorption, spread your calcium sources evenly across your meals. The vegetables listed in this section increase your need for iodine, which is critical to your thyroid health. If you are relying heavily on the vegetables, make sure to get enough iodine by using kelp flakes, seaweed-fortified salt, or an iodine supplement containing between 200 and 1000 micrograms per day. If you have an established thyroid disorder, I recommend limiting these and other cruciferous vegetables to one cup of cooked vegetables per day and emphasizing the other sources of calcium.

- **Consume at least one cup of dark green vegetables per day.** Dark green vegetables are foods like broccoli, kale, spinach, grape leaves, mustard greens, and virtually anything else that is as richly green as these foods, but not lighter green foods like lettuce or green peppers. This helps ensure you get enough vitamins A and K. Note that some of these vegetables were listed as ways to get calcium, but some were not. If you got your calcium from chia seeds, tofu, or a supplement, you still need a cup of dark greens, and you can use any in this list, including spinach and grape leaves. You can't, however, rely on spinach or grape leaves to get your calcium.

- **Meet the rest of your caloric needs from a mix of these foods:** tubers (for example, potatoes, yams, sweet potatoes, cassava, or taro), whole grains, nuts, seeds, and other fruits and vegetables besides those listed above.

- **Whenever possible, opt for soaked, soured, fermented, or sprouted versions of your pulses, whole grains, nuts, and seeds.** This increases their vitamin content and makes their minerals more easily absorbed. This is always good to do, but since you will eat more of these foods during Lent it becomes more important.

- **Include foods or supplements that aid digestion at every meal.** Examples include ginger, lacto-fermented vegetables, kombucha, raw apple cider vinegar, Swedish bitters, and digestive enzyme supplements. This principle is the same inside and outside Lent. However, during Lent you will likely be eating more beans, which many people find difficult to digest. If this is the case for you, make sure you are taking an enzyme supplement that contains alpha-galactosidase, which breaks down the most difficult to digest substances within the beans. Swedish bitters are mainly helpful for digesting fat,

so may not be as relevant as the others in meals where you are restricting oils.

- **Restrict alcohol, oils, sweets, and desserts.** Fasting from all alcoholic beverages and oils on weekdays and restricting sweets and desserts to five or ten percent of your food intake, at most, will support your ability to meet your nutritional needs. All of these contain calories yet contain little if any protein, and are quite low in most nutrients. By displacing more nutritious foods, they make it harder to hit your nutritional targets. Detoxifying alcohol, moreover, is an additional burden that taxes your calories, protein, zinc, and vitamin A, and your capacity to deal with it may be lower during Lent. When you do use oils, avoid corn, safflower, sunflower, cottonseed, canola, and soybean oils, and instead use red palm, coconut, olive, macadamia, and avocado oils. Red palm oil is an unusually nutritious oil and its use on weekends is featured in the section below on supercharging your nutrition.

Extra Tips to Supercharge Your Nutrition

These tips require a little more micromanaging, but they each carry a big nutritional payoff:

- **Once a day, every day, eat a meal that has one or two oysters, a heaping teaspoon of clams, and three to four ounces of a different invertebrate, but *does not have* any whole grains, nuts, seeds, or pulses.** The remainder of the calories in the meal can be made up of any of the following foods: avocado, coconut, potatoes, sweet potatoes, yams, squash, or any other tubers, fruits, or vegetables of your choosing.

  Oysters are by far and away the richest source of zinc, but are lower in protein than most other invertebrates. Clams are the best source of vitamin B12. They are also a good source of protein, but so are almost all other invertebrates. Whole grains, nuts, seeds, and pulses contain substances that block your ability to absorb zinc from your food.

  In this meal, the oysters supply the zinc, the clams supply the B12, the other invertebrates supply the protein, and the other listed foods meet your calorie needs while allowing you to absorb the zinc from the oysters. The reason for doing this every day and using such a small amount of oysters and clams is that you can only absorb about two-third's of a day's worth of zinc and one day's worth of B12 from each meal. Clams are rich enough in protein that they could also serve as the "different invertebrate," but rotating the protein source through other invertebrates will help you to not get sick of eating clams.

  To make this practical, I would use canned oysters and clams. Open the can and transfer them to the refrigerator in an airtight container, preferably glass, where they

should last for three to four days. Each day, you can transfer your oysters and clams from the container directly to your dish.

- **On weekends and feasts, use two or more tablespoons of red palm oil per day.** Most added oils contain few if any vitamins. Red palm oil is an exception, being extremely rich in vitamins A and E. The vitamin A in red palm oil is much easier to absorb than the vitamin A from dark green vegetables, so this adds extra insurance that you are getting enough.

- **Use an average of at least one-third to two-thirds of an ounce of natto per day.** Natto is jam-packed with vitamin K2. You can usually buy it at an Asian grocery store, you can make it at home, or you can buy it on Amazon. You could eat a little bit at each meal if you wanted, or you could eat a larger amount a few meals a week that comes to an average daily intake of at least one to two thirds of an ounce.

  If you get your vitamin K from natto, it is still good to eat a cup or more per day of dark green vegetables, but you don't have to. You can also get your vitamin A by eating a cup per day of orange and red vegetables (in addition to red palm oil on weekends and feasts). "Orange" vegetables includes squash, sweet potatoes, and carrots. "Red" vegetables includes tomatoes, red peppers, and red leaf lettuce. Technically this list includes some fruits, but most people think of the "fruits" it includes, such as red peppers, squash, and tomatoes, as vegetables. If you are unsure about any particular food, search for it on NutritionData.Com or the USDA database and see if the amount you are eating provides close to 100% of the recommended amount of vitamin A.

- **Consume one of the following each day:** 4.5 ounces of wheat germ, 3.5 ounces of cooked or canned beets, 7 ounces of raw beets, or 2-3 tablespoons of sunflower or soy lecithin. These foods provide a day's worth of choline, or provide a day's worth of betaine, a closely related nutrient that can substitute for choline.

- **Supplement with two capsules per day of krill oil.** This will give you some extra insurance for vitamin A and essential fatty acids. Compared to fish oil, krill oil is higher in vitamin A and has its fatty acids in a form that is better able to support the health of the nervous system. Krill are invertebrates, so krill oil is Lenten whereas fish and cod liver oil are not. If you have a tendency to get sick often, develop dry eyes, poor night vision, or flaky or bumpy skin, you can try using up to six to ten capsules per day for extra vitamin A, and keep the dose up if it helps.

Special Considerations

No one set of rules works for everyone. Children, pregnant and nursing women, and older adults have some special nutritional needs. You may have allergies or intolerances to some of the foods I recommended above, or have trouble digesting them, and need alternative strategies. You may be on a low-carb diet and need to shift your emphasis away from many of the high-carbohydrate foods I recommend. If you want to lose weight, or you tend to lose weight, there are important things you should consider.

If any of these apply to you, flip to the relevant section of the appendix:

Stocking the Refrigerator and Cabinets: Buying Recommendations

For clickable links to product recommendations, visit chrismasterjohnphd.com/lent

In order to efficiently get a full menu of Lenten meals going, it is important to plan ahead and stock your fridge and cabinets with the right foods. Here is what you will need, along with some specific buying recommendations.

Keep in mind that for any foods you have never tried, you might want to see if you like it before buying a large amount. Once you are sure, though, stocking up saves money and time.
Here is what I recommend stocking up on:

- **Pulses.** Tru Roots is a brand that makes sprouted pulses and grains. Their products are available on Amazon, Thrive Market, and in Whole Foods. Although not sold sprouted, Food to Live is a great brand that sells a wide variety of lentils and beans. You may also

save money by buying pulses in the bulk bins of your local market. If you are adventurous in the kitchen, you can always sprout the beans yourself. Stock up on your favorites, but ideally you should diversify your pulses across as many as you are comfortable trying to take advantage of the different nutrient profiles they each contain. Store these foods in a cool dry place, either in the sealed packages they came in or in air-tight containers of your own if you bought them in bulk, and keep them away from direct exposure to light.

- **Shellfish and Other Invertebrates.** To maintain an efficient rotation of invertebrates through your diet, you will probably need to rely on frozen or canned shellfish. Buying them fresh and shucking them on your own takes up more room in your fridge, requires a lot more of your time, has a fairly steep learning curve, and increases the risk that you'll lose food due to spoilage. If you are already proficient at handling shellfish in the kitchen, feel free to go the fresh route. Otherwise, stock up on a collection of your favorite frozen and canned shellfish so that you always have a full week's supply at hand. The most important ones you will need are oysters and clams. The others are up to you.

- **Exo Bars** are a great Lenten convenience food. You'd never know these were full of cricket flour if you didn't see the cricket on the label. Two of these bars make a modest meal requiring no prep, cooking, or cleanup. They are sold on Amazon, Thrive Market, and ExoProtein.Com. As I am writing, Thrive is completely sold out. ExoProtein.Com is sold out of my favorite, the apple cinnamon, while Amazon has it but at a hefty premium. Amazon also has the peanut butter and jelly flavor at a hefty premium, which appears to have been discontinued. Only the banana bread flavor is sold on Amazon at the typical price, and the blueberry vanilla and cocoa nut flavors can currently only be bought on ExoProtein.Com. I do not recommend eating these every day, but I think they are excellent as a backup convenience food when time is tight.

- **Chia Seeds.** You will need a robust supply of chia seeds if using them as a calcium source. Food to Live are the ones I keep in my kitchen. If using them at 5 tablespoons per day to supply one of your two or three daily sources of calcium, you can expect the one-pound bag to last you just shy of a week and the five-pound bag to last you most of the way through Lent.

- **Tofu.** Six ounces of House Foods brand firm, extra firm, or super firm tofu can serve both as a one of your three daily protein-rich foods and as one of your two or three daily calcium-rich foods. Anything medium firm or softer does not have enough protein or calcium. Other brands tend to have less calcium as well. If you choose a different tofu product, look for at least 7 grams of protein and 15% of the daily value for calcium per serving. Tofu labels count 3 ounces as a serving so the six ounces I recommend here is two servings. If the container says it has 4.5 servings, that's only enough for two meals. Decide how often you will use tofu for protein and calcium, and stock your fridge with

enough for a week.

- **Dark Greens.** My default recommendation is to eat one cup of cooked dark greens per day. These can be fresh or frozen. Different vegetables shrink during cooking by different amounts, often 20-50%, so it will take some trial and error to see how much shrinkage you get for the vegetables you are using in order to determine how much you need to buy each week. If you are relying on dark greens for calcium, you will need to focus on the specific greens listed in the recommendation and you will likely need to buy twice as many greens as you otherwise would. These also can be fresh or frozen. If you are relying on greens for folate because you cannot eat pulses, you will need to buy at least triple as many as you otherwise would and they must be fresh rather than frozen.

- **Red and Orange Vegetables.** There is no specific requirement for these in my default recommendations, but if you are covering your calcium from sources other than dark greens and are covering your vitamin K with natto, you will need to eat a cup of dark greens or red and orange vegetables to cover your vitamin A needs, which means stocking up on foods like sweet potatoes, yams, carrots, red peppers, tomatoes, and red leaf lettuce. Cooking, pureeing, and juicing these foods releases the vitamin A more effectively, so opt for choices that you can more easily incorporate into your daily routine when prepared in those ways.

- **Other Foods.** After meeting your goals for pulses, shellfish, colorful vegetables vegetables, and calcium sources, you can fill in the remainder of your energy needs with tubers, whole grains, nuts, seeds, and other fruits and vegetables. Go Raw has an excellent selection of sprouted seed products that make tasty, nutritious, and convenient snacks. You can see their full selection and buy their products in bulk on their web site, or you can buy individual packages of select products on Amazon, Thrive Market, iHerb, or in your local Whole Foods. Be mindful of how much additional food it will take you to feel satisfied and keep your weight at a healthy level. You may or may not have much room left for these foods, depending on your energy needs.

- **Digestive Aids.** Ginger is an excellent digestive aid. The fresh root can be added to your food during cooking or juiced raw. You can also steep shredded fresh ginger in warm water to make your own ginger tea, or you can buy ginger tea. Unpasteurized fermented foods containing live active cultures include sauerkraut, kimchi, pickles, carrots, raw apple cider vinegar, and kombucha. These foods are sold at Whole Foods, other health food stores, and increasingly at regular supermarkets. The raw apple cider vinegar would be with the other vinegars, while most other items in this list would be in the refrigerated section, probably near the cheese, yogurt, or eggs. “Regular” pickles are not fermented and “regular” sauerkraut has usually been canned or pasteurized, so make sure the labels say that they are lacto-fermented, raw, or contain live active cultures. I would use these in small amounts with each meal, such as one or two tablespoons of fermented veggies, or one or two swigs of kombucha, or a shot glass

worth of apple cider vinegar.

- **Supercharger Foods.** If you're following the "supercharged" recommendations, you will need red palm oil, natto, krill oil, and a source of choline or betaine, such as wheat germ, beets, or lecithin. The oysters and clams have already been covered above. On a global scale, palm oil is connected to deforestation and harm to wildlife, especially orangutans, so it is important to buy from companies committed to sustainable practices. It is also important that the palm oil be "red" to ensure it has the vitamins A and E we are after. For red palm oil, I recommend Wilderness Family Naturals, Nutiva, or Juka's. When deciding how much to buy, plan on using at least four tablespoons per week. At this rate, you would go through two ounces per week, and a one-pound jar would last you most of Lent. For natto, you will need to stock up on all the ingredients required to make it at home (the web version of this article has a clickable link to an article on making at home), or buy it on Amazon from Rhapsody Natural Foods. Plan on using a half ounce per day, in which case the 3.5-ounce package from Amazon would last you one week. For krill oil, I recommend Jarrow. Their 60-capsule bottle is most cost-effective and would last 30 days if taking two capsules per day. If using lecithin as a source of choline, I recommend Micro Ingredients Organic Sunflower Lecithin. If using two tablespoons per day, the bag will last you two weeks.

- **Supplements.** If you are relying on supplements for calcium: Soloray Calcium Citrate Capsules. If you cannot eat oysters: Jarrow Zinc Balance. If you cannot eat pulses or the large amounts of fresh greens recommended as an alternative source of folate: Jarrow Methylfolate. If you cannot eat any animal foods: Pure Encapsulations Adenosyl/Hydroxy B12. If you cannot eat invertebrates or pulses and are still fasting from fish: Sun Warrior Plant-Based Organic Protein and Bulk Supplements glycine powder (add one gram of glycine powder to each scoop of Sun Warrior protein). For general digestive support that includes support for digesting beans: Renew Life DigestMore Ultra or Enzymedica DigestGold. For digestive support at a lower cost that is specific for digesting beans: Enzymedica BeanAssist.

Tips on Preparing Food

The Challenges of Eating Out

One of the biggest challenges in implementing a food plan like this is that it requires you to primarily eat food that you have prepared at home. You can certainly eat out and make food choices that best approximate these guidelines. You can select the menu items that emphasize shellfish, pulses, and veggies. You can make special requests for extra pulses and veggies or for your food to be cooked without oil, but your success will be hit or miss. It will be hard to get

the volume of pulses and veggies you need and to avoid oils. It will be nearly impossible to get foods in the supercharged section such as natto and red palm oil.

Preparing Simple Food in Large Batches

If you're strapped for time, I recommend cooking food in large batches. This allows you to reheat several days worth of meals on demand. Most food can last at least three or four days in the refrigerator after cooking, so a few hours of meal prep twice a week should be all you need.

You can do this with standard stovetop equipment, but an Instant Pot makes it tremendously easier. The Instant Pot is a programmable pressure cooker. It isn't always quicker than cooking on a stovetop, but it is always easier. You set it for your desired cooking time and leave it alone. You don't have to worry about water boiling over and making a mess, water evaporating and leaving the food to dry, or leaving the food in too long and letting it burn. This allows you to focus on getting other things done while your food basically cooks itself.

The simplest way to do this is to keep it very practical:

- Cook frozen shellfish, pulses, veggies, and whatever side dishes you want (for example, potatoes). Add flavor and spice while cooking, or later when you reheat the foods. It doesn't matter. You can use an Instant Pot, but you can also use any other cooking method. For example, you can grill a large number of shrimp, and you can bake a whole bag of potatoes in the oven. For canned shellfish, it is already cooked and requires no further cooking.
- Keep each dish in the refrigerator in its own covered container (preferably glass, but plastic if that's what you have).
- When you make each meal, scoop out the key ingredients you need to hit your nutritional targets. Then add optional side dishes to round out your meal. Reheat it however you like.

Preparing Recipes in Large Batches

If you want to get fancy, you can cook your favorite Lenten recipes in big batches, just the same. Just put in a little planning to adjust them to meet the nutritional targets. For example, make sure that the amount you would heat up for a meal will provide a full cup of pulses or four ounces of shellfish without stuffing you silly, and make sure it has a third of your daily goal for vegetables. I'm not a chef, not even an amateur one, so I won't supply any recipes here. But I'd love for you to share yours in the comments on the web version at chrismasterjohnphd.com/lent!

Further Reading

The web version at chrismasterjohnphd.com/lent has clickable links to each of these resources.

Can Christians Be Paleo? Christianity, Faith, Evidence, Dobzhansky, Evolution, and More. In this 2010 blog article, I took on the question of whether Christians can believe in evolution, which sprang from an internet discussion of whether Christians could be Paleo. In the comments, a discussion of Orthodox Christian fasting took place. The topic of whether the fast could be "modified" was debated, and a number of people reported health problems in their families from fasting.

Nourishing Our Bodies During Lent – How to Navigate the Campus Dining Hall I was asked to write this article in 2011. It is a simpler view of how to get good nutrition during Lent when you are at the mercy of a campus dining hall.

Testing Nutritional Status: The Ultimate Cheat Sheet This is my guide to assessing nutritional status. The guidelines in this article are meant to give you the best probability that you are meeting your needs. But we are all different, and we may want to take a closer look at whether we, as individuals, are truly meeting our own needs. The guide walks you through assessment of signs, symptoms, and dietary intake that you can do on your own, and lab testing that you can do with the help of your doctor.

The Ultimate Vitamin K2 Resource takes a fun and highly educational deep dive into one of the nutrients discussed in this article: vitamin K2.

For brief, practical tips on optimizing your nutrition, check out my **Chris Masterjohn Lite** series.

For deep explorations of the technical details of optimizing your status for individual nutrients, check out **my series on measuring and managing nutritional status**.

For technical details and scientific references pertaining to this article, see page 31 in the appendix.

Join the Discussion!

Please join the discussion and let me know what you think, ask questions, or share recipes by leaving a comment at chrismasterjohnphd.com/lent!

Appendix

Can’t I Eat Less of These Nutrients for a Mere 40 Days?

> *A little technical note: while “Lent” is 40 days long, this does not include Lazarus Saturday or Holy Week, which occur after Lent, or the meat-free week leading up to Lent. So the period of full Lenten fasting is 48 days, and the total period of fasting including the more liberal meatfare week is 55 days. Furthermore, there are other periods of fasting in the Orthodox calendar, many of which are less stric than Lent, that total an average of 200 days per year of some level of dietary restriction. For simplicity, I’m going to refer to 40 days of fasting in this section, which has symbolic value and is how Lent is colloquially spoken of.*

During Lent, you are likely trying to live a calmer life more focused on prayer, kindness, charity, and church attendance. If so, you will likely be spending less time drinking, partying, competing to get ahead in life, and pushing your physical limits in the gym, the field, or in competitive sports. To the extent these are true, the lower demand on your body to fuel and recover from these stressors may allow you to get by with lower levels of many nutrients.

If you eat an incredibly nutritious diet outside of Lent, your nutritional reserves will be high and this may carry you quite easily through a temporary period of less nourishment.

So, you may make it through Lent with little attention toward a nutritious diet without developing any problems at all. Many of us, however, go into Lent with a lifelong history of mediocre nutrition. During Lent, we have obligations to school, work, team sports, or social commitments of other forms that prevent us from completely destressing the way we would in a monastery. Under these conditions, we need to be especially mindful of our nutrition to prevent deficiencies. Even if we don’t notice any health problems, deficiencies are cumulative. Heading mindlessly into Lent each year focusing only on what not to eat and never on what to eat to be healthy could lead to problems years down the road.

Let’s look at three examples.

Protein

Protein is needed for literally every process in your body, but it is especially important to maintaining your lean muscle mass. It may seem that this concern is just about looking muscular, and that is easy for many of us to dismiss as vanity. But carrying less total muscle mass actually hurts our metabolism in ways that can contribute to diabetes. As we age, it makes

us more vulnerable to injuries. When we carry less muscle mass, our bodies consider it less important to maintain bone mass, predisposing us to osteoporosis as we get older.

Many people lose weight during Lent. When you lose weight, a portion of it is fat mass, and a portion is lean mass. The more protein you eat, the more fat you will lose. The less protein you eat, the more lean mass you will lose. If you eat a lower-protein diet during Lent and lose a little lean mass, then gain it all back later, it's no big deal. But that probably won't happen. You don't gain weight and mostly gain lean mass unless you follow bodybuilding techniques in both the gym and the kitchen. More likely, you will gain back at least a portion of that weight as fat. This is especially true if you pig out when Pascha comes around and gain the weight back quickly. If you lose a little lean mass every Lent, and always gain the weight back as fat, then you will slowly, year after year, lose lean mass and gain fat mass. Gaining extra fat worsens all the risks of carrying too little lean mass, especially the contribution to diabetes. To top it all off, shifting your focus away from physical pursuits during Lent will spare your need for calories and for certain vitamins and minerals, but not your need for protein. Lack of intense physical exercise will actually encourage your body to shed lean mass, and consuming enough protein will protect against this effect.

Vitamin B12

Vitamin B12 deficiency is serious business. If it progresses without being detected early on, it leads to irreversible nervous system degeneration. Early signs of B12 deficiency can be found in over 70 percent of vegetarians, over 90 percent of vegans, and over 15 percent of the elderly. B12 deficiency does not develop quickly. If we have been consuming an optimally nutritious diet for decades, we may have enough vitamin B12 stored to last us decades on a deficient diet. So the likelihood that you would develop vitamin B12 deficiency in just 40 days by not eating any animal products during Lent is small. There are two reasons, however, not to dismiss the importance of B12.

First of all, many of us barely scrape by getting our basic needs for B12 met outside of Lent. Hitting the RDA (the government-endorsed recommendation for a daily nutrient goal) requires three four-ounce servings of most meat and fish products, three glasses of milk, or some mix-and-matched combination of these foods. Many of us just don't hit that target. That means that over time we are very slowly heading toward deficiency rather than building our reserves.

Second, about half of us have a bacterium known as H. pylori in our stomachs. While this organism is famous for causing ulcers, it plays a lesser known role in vitamin B12 deficiency: beginning in childhood, it causes low-level inflammation in the stomach. Without ever causing symptoms, the inflammation progresses over decades to the point that it impairs the absorption of B12 enough to cause deficiency in 10-15% of the elderly. Further, one in a thousand young

people and one in fifty elderly people have a disease called pernicious anemia, which prevents them from absorbing B12.

While going 40 days without B12 will not in and of itself make you suddenly deficient, going decades eating a B12-deficient diet every year will put you at a much greater chance of developing B12 deficiency when you are older. Our youth and middle age should be spent building our B12 reserves so that they don't fail us in the decades when our absorption declines. In each meal that we eat, we can only absorb about one day's worth of B12. Everything else is wasted. So we can't just stockpile B12 outside of Lent and other fasting days. For maximal protection, most of our meals through the year should contain a source of B12.

Calcium

Most of the calcium in our bodies is in our bones, but it has to be present in small amounts in all of our cells and in our blood for us to be healthy. In our muscles, we use it to stimulate contraction every single time we move. If we get injured, our platelets use it to form a clot. If our blood levels of calcium fall, we may have trouble sleeping, start twitching, or in severe cases develop tremors, seizures, or coma. In general, our calcium intake can drop quite low for a while with no problems, because we have an enormous amount of calcium in our bones that can leak out as needed to maintain the health of these other systems. Nevertheless, having to continuously take calcium out of the bones for these purposes hurts our bones in the long-term, since they need calcium for structural support and integrity.

Our bones grow while we are children, and they continue to accumulate calcium and other minerals until some point in our 20s. By the age of 30, our bone mass has started to decline, and by the age of 40 this decline begins picking up momentum.

Before the age of 30, the main effect of nutrition is to maximize our potential to gain bone mass. After the age of 30, the main effect of nutrition is to slow down the loss of bone mass.

Depending on our nutrition and lifestyle over decades, we may or may not reach a point in our old age where our bone mass is sufficiently degraded that we develop osteoporosis and a high risk of suffering from bone fractures. During all points of our life, we are tipping the balance toward a greater or lesser degree of long-term bone loss as we age. Going 40 days on a low-calcium diet will not give you spontaneous osteoporosis, but doing it every single year will worsen your chances of bone problems in the long-term. The Orthodox fasting calendar actually contains closer to 200 days without dairy. If all of them are spent without mindfully seeking out alternative sources of calcium, we will actually be spending the majority of our days each year on the side of aggravating long-term bone loss.

Calcium problems don't only occur in old age. Growing children, who are generally considered exempt from Orthodox fasting practices, have an especially high need for calcium. In fact, boys

and girls between the ages of 10 and 14 have the same fracture risk as a 53-year-old woman. The calcium RDA for children and teenagers aged 9 through 18 is 30 percent higher than for other adults, to cover the needs of their bones while growing. Tooth decay is also common in children, and calcium plays the same supportive role in teeth that it plays in bone. While the average person will not develop insomnia or twitching on a short-term low-calcium diet, some people will, and this can happen at any age.

And bone health isn't only about calcium. Not by a mile. Vitamin D, which we get mainly from outdoor sun exposure but also fish, shellfish, and mushrooms grown outdoors or in ultraviolet light, helps us absorb calcium. Vitamins A, D, and K, zinc, and magnesium help put it into our bones. Physical exercise, especially resistance exercise, causes our bodies to to put more calcium into bones and to shape the bones into more injury-resistant architecture. Getting good sleep and coping with stress in healthy ways helps balance our hormones to support strong bones. Heading into Lent with time spent outdoors, a prayerful focus that supports healthy stress management, and an otherwise well balanced diet, may help us get away with a temporarily lower calcium intake. But doing these things and getting enough calcium is best, especially in the long-term.

Can't I Just Take Supplements?

You may wonder, if we can narrow our concerns down the seven most important nutrients, why not just eat anything that conforms to the Lenten guidelines and take a handful of supplements?

I am not against supplements, but they are called "supplements" for a reason: they should supplement a healthy diet, not replace one. The foundation of our approach to nutrition should be to get the nutrients we need from food, and here are four reasons why.

First, our knowledge is limited. Natural foods contain hundreds of substances that could impact our health, and there may well be much more that we don't know than that we do know.
We can take an illustrative case from the history of the diets given lab rats. Prior to 1978, most lab rats were given cereal-based diets made of whole grains. In 1978, researchers developed purified diets that included all of the nutrients known to be essential in the amounts they believed to be optimal for lab rats. They hoped this would make results more consistent between experiments. The diets were more consistent, but they were clearly less healthy than whole grains: rats fed these new diets developed fatty liver, excessive bleeding, and kidney stones, problems that never developed spontaneously in the grain-fed rats of previous generations. In 1993, they adjusted the quantities and ratios of many of the nutrients to address these problems. But they also added a collection of "ultratrace elements." These are elements that are found in very small quantities in whole foods but have no known essential roles. Although no one has clearly demonstrated why they are needed, animals that get them at the levels found in foods are less vulnerable to stresses and toxin exposures than animals that don't. Even on these better diets, there are still components that are missing. Fiber, for example. Many of the health problems that animals develop on high-fat diets can be obliterated

by providing enough natural fiber. Forty years into their development, these scientifically formulated diets still aren't as healthy for the lab rats as whole grains are.

The story of total parenteral nutrition (TPN) is similar. TPN is used to feed patients intravenously when they are unable to consume food orally. TPN has always been developed to provide everything known that the patients need. Originally, it was fat-free. Patients on TPN would often develop eczema, however. Fatty acid researchers argued that this was because of inadequate omega-6 fats, so they began adding soybean oil or safflower oil. The safflower oil TPN, however, contained almost no omega-3 fats. No one considered this important until 1983, when a six-year-old girl undergoing repeated surgeries for an abdominal gunshot wound spent six months on TPN and developed numbness, tingling, weakness, inability to walk, leg pain, psychological disturbances and blurred vision. All of these problems disappeared when she was given omega-3 fatty acids. From then on, TPN contained omega-3 fats, but it still didn't contain any choline. After showing that patients on TPN developed fatty livers that went away when they were given choline, choline was finally declared an essential nutrient for humans in 1991 and added to TPN. But is TPN perfect now? What else might it be missing?

The second reason we should focus on foods is that nutrients in foods often occur in more complex forms than the same nutrients in supplements. For example, you can take a vitamin K2 supplement, but K2 actually refers to a collection of ten compounds. Five of these are found in natto and you get all ten if you diversify your K2 intake across multiple foods. We don't know yet whether getting the full spectrum is better than just getting one form. However, we can take an example from vitamin E. Vitamin E is actually a collection of 8 compounds. Throughout the 20th century, we assumed that alpha-tocopherol was the most important form, and this is the one we used in supplements. In the last decade or two, we have a growing body of evidence that the other seven forms are important, and that taking high doses of alpha-tocopherol can actually hurt us by drowning out these other forms. Similarly, the vitamin A in supplements is usually retinol or beta-carotene, but colorful vegetables contain about 600 carotenoids. We know some of these, such as lutein and lycopene, have beneficial health effects. What about the others? In my view, it is better to just eat them than to assume we can replicate their important components with pills.

Third, some nutrients are required in large amounts that they don't fit well into pills. For example, getting enough protein without food requires many tablespoons of powder. Meeting the RDA for potassium requires taking 48 tablets. If you use my recommendations to get your protein and other nutrients from whole foods, you will get enough potassium. But if you mostly eat bread, ramen noodles, and hummus while supplementing the seven nutrients I listed, you won't.

Fourth and finally, some nutrients are safer to get from food. Potassium is the best example. Let's say you took 48 tablets of potassium, or spoonfuls of a bulk potassium powder, rather than getting it from food. When you get potassium from supplements, it hits your bloodstream much faster than when you get it from food. If you have healthy kidneys, it's no big deal, because you

just pee it out. But if you have kidney disease, or if you are insulin resistant (meaning you have diabetes or are on your way there), or if you take over-the-counter anti-inflammatory medications, your ability to excrete excess potassium might be impaired. In that case, taking a huge dose of a rapidly absorbed supplement could cause disturbances in your heart rhythm and other problems that could require emergency medical care.

In fact, the FDA regulates potassium supplements to contain no more than 99 milligrams for this very reason. Yet the RDA is 48 times higher than this! Why is it safe to get large doses from food? Because when you get it from food, the potassium is released in a very slow trickle over the course of hours while your food digests. It never hits your bloodstream fast enough to cause any problems.

Ah, you may say, why not just take a time release capsule? You can, but the time release capsules have their own problems. They sit in your stomach longer, holding a very high concentration of potassium in a single spot, allowing the potassium to irritate the stomach lining, sometimes causing discomfort or injury. When you eat potassium in food, it is distributed across a very large surface area and cannot cause these problems.

Some people believe that calcium falls into this category. According to this theory, calcium from supplements hits your blood faster and is more likely to wind up in your kidneys, where it causes kidney stones, or your blood vessels, where it causes heart disease. Calcium from food comes in more slowly and your body manages it better by getting more of it into your bones. I am not sure if this is true. But it might be, and I consider it better to get calcium from natural foods than from supplements. Still, the worst case scenario is to be deficient in calcium, so I recommend starting with foods, and filling in the gaps with supplements.

Special Considerations

Children, Pregnant and Nursing Women, Older Adults

In general, children, pregnant and nursing women, and the elderly, especially if frail, are considered exempt from strict fasting. Nevertheless, in practice, most people across all these populations follow the Lenten fast at least in part. This section is for you if you fall into one of these categories and would like to follow parts of the fasting guidelines without compromising your nutritional needs.

> Please note that this is not a comprehensive guide to the nutritional needs of each population. It is only a list of suggestions about which aspects of the fasting guidelines to emphasize or deemphasize to best protect your nutritional needs. For comprehensive guidance, please discuss your needs with a qualified dietitian or nutritionist.

If you move down the ladder from the strictest fast to the least strict, the first modification you would make is to include oils and alcoholic beverages, the second to include fish, the third to include dairy and eggs. Beyond this, the only next category to include is meat and poultry, and at that point you are no longer fasting.

From among these foods, the oils and alcoholic beverages provide very little nutritional value. The real value is in fish, dairy, and eggs. Fish makes it much easier to obtain enough protein. If someone cannot eat invertebrates, fish also helps meet the needs for B12 and zinc. Cod liver oil, derived from fish, is an excellent source of vitamins A and D and of essential fatty acids. Dairy products make it much easier to get enough calcium. Eggs are especially rich in choline and biotin, which support healthy liver function and brain development, prevent birth defects, and protect women from depression.

Let's take a look at how each population is impacted by the Lenten fasting tradition.

Children and Teenagers

If children were to follow the fasting guidelines in this article, for the most part, you could make dishes with the same foods in the same proportions, but the children could eat less total food according to their appetite.

There are two exceptions:

- Children under the age of four have developing brains with high needs for choline. Egg yolks, in whatever form and amount they will eat them, are very beneficial in this stage.
- Children and teenagers between the ages of 9 and 18 need an extra serving of calcium-rich foods. It may be much easier for them to meet their calcium needs with dairy products.

A second complication is that children are usually picky eaters. If they won't eat chia seeds, cups of cruciferous vegetables, or calcium-fortified foods, they will need either a calcium supplement or dairy products. If they won't eat shellfish, they will need fish to get enough protein. If they won't eat fish, eggs and dairy products may be the best way to meet their protein needs while also getting in other important nutrients.

If children tolerate cod liver oil, it is an excellent source of vitamins A, D, and essential fatty acids, all of which are helpful during growth.

Pregnant and Nursing Women

Biotin needs increase during pregnancy, and about one-third of women become spontaneously biotin deficient once they become pregnant. Biotin deficiency during pregnancy can cause birth defects, depression, hair loss, and scaly, red, itching skin around the mouth, nose, and the skin between the anus and vagina.

Choline is also very beneficial during pregnancy. It works with another nutrient, folate, to prevent birth defects, and it fuels the beginnings of brain development. The developing brain's high need for choline continues through the first four years of life, making choline very beneficial for nursing women and their infants.

The best source of both biotin and choline is egg yolk. Three or four eggs per day is a great way for pregnant and nursing women to stock up on these nutrients.

During the third trimester of pregnancy, the mineralization of the fetal skeleton begins. This causes calcium to be transferred from the mother to the unborn child. To fuel this, the mother's intestinal calcium absorption doubles, leaving her dietary requirement unchanged. Nevertheless, calcium supplementation has been shown to lower blood pressure in pregnant women and reduce the risk for preeclampsia. While there is yet no basis to say that pregnant and lactating women need more calcium than other adults, high blood pressure and preeclampsia may represent risks of falling short unique to pregnancy. Therefore, it is particularly important for pregnant women to hit the calcium target, using supplements or dairy foods if necessary.

During pregnancy, you may experience cravings or aversions for certain foods. You may also have trouble digesting some foods, especially pulses. As long as you stay mostly within the realm of natural, whole foods, I think it is best to obey these intuitions. That might mean you need to climb your way down the ladder from invertebrates to fish to meat in order to get your protein. It might mean you need to use dairy products rather than chia seeds or vegetables to get your calcium. It is important to listen to your body and give it what it needs rather than to let yourself develop deficiencies or force feed yourself with foods that your body is rejecting.

If you tolerate cod liver oil, it is an excellent source of vitamins A, D, and essential fatty acids, all of which are helpful to fuel the growth of your child and help your body deal with the increased demands of pregnancy and lactation.

Over the Age of 50

Women over the age of 50 and men over the age of 70 would benefit from an extra serving of calcium-rich foods per day. This may be a reason to consume some dairy products during Lent.

The amount of protein required to maintain lean muscle mass increases with age. While the protein targets recommended in this article should be adequate regardless of your age, the potential risk to your health of falling short of these targets increases as you get older. Take special care to meet the protein targets, and use fish or a protein supplement to do so if needed.

Allergies, Food Intolerances, and Digestive Problems

For most allergies and food intolerances, you can modify these recommendations to simply exclude the food you are allergic to and little will be lost. For example, eating gluten-free or nut-free does not pose any obstacles to getting good nutrition during Lent when following the recommendations above.

It gets a little more complicated if you have shellfish allergies or if you have a need to eliminate pulses, since these foods play special roles in meeting your nutritional needs during Lent.

Allergies to Shellfish and Other Invertebrates

If you are allergic to any particular shellfish, such as shrimp, you may be allergic to other shellfish, and you may also be allergic to other invertebrates such as snails and crickets. If you are allergic to one invertebrate and are trying another, you should try it at your own risk and with all the caution you would consider necessary to handle a potential allergic reaction.

If you are new to shellfish, tread carefully, especially if you have a weak digestive system. Shellfish can be a source of foodborne illness and if you have a weak stomach you may be more vulnerable. Buy them fresh and care for them properly. Or, buy them canned but only from companies you trust. Only get them at restaurants with good reputations for quality. Start slowly and see how you tolerate them. If you have a weak digestive system and a tendency to get stomach bugs, make sure they are always fully cooked.

If you need to abstain from oysters, I recommend supplementing with zinc. Take one Jarrow Zinc Balance per day on an empty stomach with a glass of water. In the unlikely event taking it on an empty stomach causes nausea, take it with food, but take it with a meal that does not contain any whole grains, nuts, seeds, or legumes, since these foods inhibit zinc absorption.

If you need to abstain from all shellfish and invertebrates, you need to pay particular attention to your protein intake. 3 cups of cooked pulses per day, when combined with a diet low in oil, snacks, and refined foods, may provide you with sufficient protein. I recommend using a smartphone app such as MyFitnessPal or Cronometer to track your food for a few days and see whether you are hitting at least a half a gram of protein for every pound of ideal bodyweight. If not, consider a protein supplement or ask for a blessing to eat fish, and use either of these to fill the gap so that you meet your protein target. As a Lenten protein supplement, I would currently recommend Sun Warrior Plant-Based Organic Protein. It mixes hemp and pea protein. I am currently experimenting with it and can attest to its tolerable taste and texture. I have found pea protein much less tolerable. This supplement does not have enough glycine, however, and I recommend supplementing each scoop with one gram of Bulk Supplements glycine powder.

I also recommend you supplement with vitamin B12. Most invertebrates are good sources of B12. Oysters are great sources and clams are phenomenal. Unlike protein and zinc, your body can hold on to years worth of B12 at a time, and going Lent without daily B12 will not make you spontaneously become deficient. Nevertheless, the consequences of B12 deficiency are serious, and include irreversible nervous system degeneration. Most people slag behind the RDA for B12 intake on a daily basis, and many people slowly develop digestive problems over the course of their life that makes their absorption of B12 from food steadily decline. By the time they reach retirement age, normal meat eaters have a 15% risk of B12 deficiency. Adding one or two months a year of consuming zero B12 from food year after year aggravates this problem, so if you must abstain from all animal foods during Lent, it is best to take B12. I recommend Pure Encapsulations Adenosyl/Hydroxy B12, which has a mix of the two most common forms of B12 you would obtain from food.

Trouble Digesting Beans

If you have trouble digesting beans, the two strategies at your disposal are to prepare them properly and to supplement with digestive enzymes. It makes things easier to cook them in a pressure cooker because you can skip the pre-soaking step, but I include guidelines for both below.

To prepare beans properly on the stovetop:

- Start with dried beans, preferably organic, and preferably sprouted.
- Rinse them, and then pre-soak them. Put them in a pot, add water till it covers them by a few inches, and let them sit in the refrigerator for at least one hour and overnight if needed. Larger beans require longer soaking than smaller beans, but judge it based on what leads to the product that is easiest for you to digest. Optional: include a strip of kombu or a splash of apple cider vinegar to enhance the pre-digestion of the beans.
- After soaking, discard the water and rinse the beans.

- Refill the pot with water for cooking. Bring it to a boil on the stovetop and then and turn it to a simmer. Consult a recipe or instructions that provide the appropriate cooking time for the bean you are using, but feel free to cook longer if necessary. Beans are done when they are tender, but longer cooking times increase their digestibility. Optional: as in the pre-soak, include a strip of kombu or a splash of apple cider vinegar to enhance the pre-digestion of the beans.
- Discard the cooking water and rinse the beans.

To prepare beans properly in a pressure cooker:

- Start with dried beans, preferably organic, and preferably sprouted.
- Rinse them, especially if you obtained them from bulk bins, but skip the pre-soak.
- Fill the pot with the beans, allowing enough room for them to double in volume during cooking.
- Fill the pot with at least twice as much water as beans.
- Optional: add a strip of kombu or a splash of apple cider vinegar to enhance the pre-digestion of the beans.
- Cook at high pressure for 60 minutes.
- Discard the cooking water and rinse the beans.

Regardless of which method you use, if there is no water left over to drain after cooking, you didn't put enough in to begin with. Use more next time.

When consuming beans, take a digestive enzyme supplement that contains alpha-galactosidase. Examples of complete digestive formulas that contain this enzyme are Enzymedica DigestGold and Renew Life DigestMore Ultra. Enzymedica also makes BeanAssist, which is less expensive and contains this enzyme exclusively. If needed, feel free to take two or three capsules of any of these products per meal rather than the one capsule recommended on the label.

If you consider these steps too difficult, consider trying lentils and peas as your main pulses. They are easier to digest than beans but provide similar nutritional benefits. If even this fails, follow the steps in "If You Cannot Eat Pulses" below.

If You Cannot Eat Pulses

Apart from soy, most pulses are not common allergens. Nevertheless, there are diets that restrict them, such as various forms of the Paleo diet. You may have trouble digesting pulses and none of the recommendations for that problem above have worked, or perhaps you just hate them.

If you need to restrict pulses but do not need to restrict invertebrates, the main nutrient you need to pay attention to is folate. To obtain enough, aim for three cups of cooked dark greens or six cups of raw dark greens (when greens are cooked, they shrink and take up less volume). To ensure you actually get folate from these veggies, follow these three rules:

- These must be fresh, not frozen. Folate is not stable in frozen storage.

- If you rinse and cut the vegetables, rinse them before cutting rather than after. If you rinse the vegetables after cutting, then much of the folate will be lost in the rinsing water.

- Use gentle cooking methods (steaming or stewing) and reuse the cooking water. Excessive heat destroys folate, and wet cooking always leaches some folate into the cooking water. If you cook the veggies in a soup, the broth itself is the cooking water and you don't have to worry about this. If you steam them, try to capture the cooking water and use it for something else that will allow you to consume it. If following this rule is impractical, you should aim for four cups of cooked dark greens instead of three.

When consuming this many greens, it is important to diversify them. Some of them should be crucifers, which include broccoli, Brussels sprouts, cabbage, cauliflower, collard greens, kale, kohlrabi, mustard greens, rutabaga, turnip greens, bok choy, arugula, and watercress. These are good sources of calcium, promote detoxification, and protect against cancer. But you don't want to eat more than two or three cups of these, because they also increase your need for iodine and in excess can hurt your thyroid gland. When you do use them, make sure to get enough iodine by using kelp flakes, seaweed-fortified salt, or an iodine supplement containing between 200 and 1000 micrograms per day. You should also include other greens, like spinach and grape leaves, to meet your folate needs without overdoing the crucifers.

If you have trouble digesting greens, find all of this impractical, or have a thyroid disorder, in which case I recommend limiting crucifers to one cup per day, it is best to take a folate supplement. I recommend Jarrow methylfolate once or twice a day with a meal.

If You Cannot Eat Invertebrates Or Pulses

If you have to abstain from invertebrates and pulses it will not be possible to hit the protein target from Lenten foods alone. In this case, you need to use a protein supplement (e.g., Sun Warrior Plant-Based Organic Protein with one gram of glycine powder per scoop) or ask for a blessing to eat fish.

You will also need to supplement with zinc as described above under "Allergies to Shellfish and Other Invertebrates" and to follow the folate recommendations under "If You Cannot Eat Pulses" above.

If You Want to or Tend to Lose Weight

Many people spontaneously lose weight during Lent.

When you lose weight, you want to lose fat mass, not lean mass. If you lose a little bit of lean mass once and gain it back later, it's no big deal. But if you lose a little bit of lean mass during Lent, then pig out when Pascha comes and gain back all the weight you lost, you will probably gain the weight back too quickly and gain it back mainly as fat, especially if you aren't in the gym a few days a week with a bodybuilding routine. Year after year, this could lead to a slow but enduring transition toward carrying less of your weight as lean mass and more of it as fat mass.

This doesn't just affect your looks and body image. It affects your health. Carrying too much fat mass increases your risk of diabetes and heart disease, and losing lean mass makes you less strong and vibrant, and increases your risk of bone loss and injury as you get older.

Therefore, if you tend to lose weight during Lent, you should take measures to ensure that you lose mainly fat mass rather than lean mass. There are three factors that determine this balance:

- More exercise, especially weight-bearing exercise, and especially bodybuilding techniques, will shift the weight loss toward fat loss.

- Slower weight loss (for example, a half pound per week would be slow, 2 pounds per week would be very fast) will shift the weight loss toward fat loss.

- A higher protein intake will shift the weight loss toward fat loss, and carbohydrate will help spare the amount of protein required to achieve this.

Were the Lenten diet not an issue, I would recommend that most people consume one gram of protein per pound of target bodyweight while losing weight. This is impractical on a Lenten diet.

Therefore, I would recommend as follows:

- Make sure you consistently hit at least a half gram of protein per pound of target bodyweight.

- Aim for a higher carbohydrate intake by emphasizing pulses, grains, tubers, and fruits, and by deemphasizing coconut, avocado, nuts, and seeds.

- Try to eat enough food that you limit weight loss to a half a pound per week.

- Hit the gym three times a week. Lift weights for three sets per exercise, 8-15 reps per set, using a weight that is heavy enough that you would not be able to do 20 reps per set

even if you tried your hardest. Make sure to include both lower and upper body exercises, and both pulling and pushing exercises. If you have any cardiovascular issues, talk to you doctor before starting an exercise program. Have a personal trainer design a full-body program for you or look for one online. Always have a personal trainer show you how to do new exercises. These recommendations apply equally to males and females.

You may not have the time to start a new exercise program, especially when you are putting more emphasis on church attendance and making more time for prayer. In that case, I would ask the question, “How necessary is it that I lose weight now?” If you can save it for another time, do so. If it is a matter of medical necessity or you consider it unavoidable, fulfill the other recommendations above. Consider using a protein supplement (e.g., Sun Warrior Plant-Based Organic Protein with one gram of glycine powder per scoop) or asking for a blessing to eat fish to keep your protein closer to a gram per pound of target bodyweight.

Low-Carbohydrate Diets

If you have the flexibility to eat a higher carbohydrate diet during Lent, I recommend doing so. As described in the “If You Want to or Tend to Lose Weight” section above, carbohydrate spares the need for protein, and since your protein intake is lower during Lent, a higher-carbohydrate diet will do a better job protecting you from loss of lean mass. Moreover, pulses are a major source of protein during Lent and most of them are quite high in carbohydrate, making it more difficult to get enough protein on low-carb in the first place.

With that said, the Lenten diet can be adapted to low-carb. Focus on invertebrates, nuts, seeds, avocados, coconut, and low-carbohydrate vegetables. Follow the folate recommendations in the section on pulse restriction. Save weight loss for a period when you can focus more on hitting a higher protein intake, such as one gram of protein per pound of bodyweight. If you find that weight loss is unavoidable or a medical necessity, use a protein supplement (e.g., Sun Warrior Plant-Based Organic Protein with one gram of glycine powderper scoop) or ask for a blessing to eat fish.

Technical Details and References

This section is best read on chrismasterjohnphd.com/lent, where you can click the links and follow them to the sources.

Protein

Examine.Com, “How much protein do I need per day?” reviews protein requirements.

Why You Need Glycine: A Panel Discussion. This covers the interactions between methionine and glycine.

The methionine-to-glycine ratio of any food can be calculated by searching for the food in NutritionData.Com, and under “Protein & Amino Acids” within the food’s entry, clicking on “More Details.” You can then manually calculate the ratio of the amino acids listed.

The highest (worst) ratio is in eggs and dairy, where it is close to 1.0. Fish have a ratio closer to 1.5, and meat and poultry have a ratio closer to 2.0. Lobster, shrimp, and crab have ratios close to 2.0, and thus are not any better than beef or chicken. Most other shellfish, however, have ratios close to 3.0. This places them near the pulses, which tend to have ratios between 3.0 and 4.0. Out of all the invertebrates discussed in this article, crickets have the highest ratio at 3.5, placing them right in the midst of the pulses.

The protein supplement I recommended has a ratio of 1.5, which is closer to the animal products eaten outside of Lent. It therefore makes sense to supplement it with one gram of glycine per scoop, which brings its ratio up to 3.0.

Vitamin A and Oils

The percentage of carotenoids converted to retinol ranges 3-25% for most plant foods. Foods with simpler matrices more easily converted, e.g. red palm oil>fruit>vegetables. Processing such as cooking and pureeing increases absorption and conversion. The conversion is decreased by fiber, parasites, toxic metals, oxidative stress, substitution of polyunsaturated fats for monounsaturated fats or saturated fats, deficiencies of iron, zinc, or protein, and hypothyroidism. The conversion is increased by fat, vitamin E, and a deficiency of vitamin A (since the body is struggling to get more retinol). Common genetic variations alone can decrease the conversion up to four-fold.

The fact that polyunsaturated fats, compared to other fats, decrease the conversion is one of the reasons for recommending to avoid corn, safflower, sunflower, cottonseed, canola, and soybean oils, and instead use red palm, coconut, olive, macadamia, and avocado oils. The recommended oils are lower in polyunsaturated fats. Their negative impact on carotenoid conversion is reflective of their general ability to promote oxidative damage. Oxidative damage also plays a role in many diseases.

One could make an argument that fat should always be consumed with provitamin A carotenoids. However, in the context of the Lenten diet where protein and other nutrients are at lower levels, I believe making room for them takes priority. Fat-soluble vitamin absorption never declines to zero, even on a low-fat diet. Large amounts of carotenoids can compensate for lower absorption. Vitamin A also does not need to be gotten in equal amounts every day, so

using oils, especially red palm, on the weekends can boost vitamin A intakes higher at those times and keep long-term vitamin A status at healthy levels.

Institute of Medicine (US) Panel on Micronutrients. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. 2001.

Leung. The challenge to reach nutritional adequacy for vitamin A: β-carotene bioavailability and conversion–evidence in humans. 2012.

Hu. Intestinal absorption of beta-carotene ingested with a meal rich in sunflower oil or beef tallow: articleprandial appearance in triacylglycerol-rich lipoproteins in women. 2000.

Dong. The Effect of Red Palm Oil on Vitamin A Deficiency: A Meta-Analysis of Randomized Controlled Trials. 2017.

Calcium

These two sources cover the bioavailability of calcium from plant sources and the amounts needed to achieve the equivalent of a glass of milk:

Weaver. Dietary calcium: adequacy of a vegetarian diet. 1994.

Weaver and Heaney. Food Sources, Supplements, and Bioavailability. In: Weaver and Heaney, eds. Calcium in Human Health. 2006.

The rationale for the requirements can be found here:

Institute of Medicine (US) Panel on Micronutrients. Dietary Reference Intakes for Calcium and Vitamin D. 2011.

For calcium amounts in foods not listed in the references above, I used NutritionData.Com and the USDA database.

For chia seeds, I assumed their absorption was similar to almonds and the pulses that have been tested, which is a little over 20 percent.

I dismissed almonds as a source of calcium. Even though they are rich in calcium on a per-weight or per-volume basis, the 1.3 cups required to equal one glass of milk has over 1000 calories. The five tablespoons of chia seeds, by contrast, has less than 300 calories.

Tofu, discussed in the main text as a calcium-rich food, is technically supplemented with calcium since the majority if its calcium is added during the coagulation process. Nevertheless, as a

solid food with evenly distributed calcium, it seems likely that it supplies slowly absorbed calcium like a naturally calcium-rich food would. Furthermore, it serves as a protein source and carries with it the nutrient profile of pulses, so it fits well into the recommendations in multiple ways.

Figure 1 in Santos, Exercise and bone health across the lifespan, 2017 shows bone mass across lifespan.

Zinc

Why You Should Manage Your Zinc Status and How to Do It has a detailed discussion of zinc and a list of scientific references.

Vitamin K2

The Ultimate Vitamin K2 Resource contains a comprehensive discussion of vitamin K2. If you click open the detailed explanations, you will find a rich supply of scientific references.

Vitamin B12

Institute of Medicine (US) Panel on Micronutrients. Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B6, Folate, Vitamin B12, Pantothenic Acid, Biotin, and Choline. 2001.

Herrmann. Vitamin B-12 status, particularly holotranscobalamin II and methylmalonic acid concentrations, and hyperhomocysteinemia in vegetarians. 2003.

Herrmann. The usefulness of holotranscobalamin in predicting vitamin B12 status in different clinical settings. 2005.

Gille and Schmid. Vitamin B12 in meat and dairy products. 2015.

Doets. Systematic review on daily vitamin B12 losses and bioavailability for deriving recommendations on vitamin B12 intake with the factorial approach.2013.

Watanabe. Vitamin B_{12}-containing plant food sources for vegetarians. 2014.

Andres and Serraj. Optimal management of pernicious anemia. 2012.

Sipponen and Maaroos. Chronic gastritis. 2015.

Schwarz. The influence of a whole food vegan diet with Nori algae and wild mushrooms on selected blood parameters. 2014.

Watanabe. Characterization of vitamin B12 compounds from edible shellfish, clam, oyster, and mussel. 2001.

Heyssel. Vitamin B12 turnover in man. The assimilation of vitamin B12 from natural foodstuff by man and estimates of minimal daily dietary requirements. 1966.

Choline

Zeisel. Concentrations of choline-containing compounds and betaine in common foods. 2003. USDA Database for the Choline Content of Common Foods.

Masterjohn. Does Choline Deficiency Contribute to Fatty Liver in Humans 2010?

Masterjohn. Meeting the Choline Requirement — Eggs, Organs, and the Wheat Paradox. 2010.

The Limitations of Supplements

They Did the Same Thing to the Lab Rats That They Did to Us covers the evolution of diets for lab animals.

Precious Yet Perilous: Understanding the Essential Fatty Acids covers the addition of essential fatty acids to TPN.

Zeisel. Choline, an essential nutrient for humans, 1991, covers the addition of choline to TPN.

The Ultimate Vitamin K2 Resource covers the multiple forms of vitamin K2.

The Linus Pauling Micronutrient Information Center article on Vitamin E covers the multiple forms of vitamin E.

Institute of Medicine (US) Panel on Micronutrients. DIETARY REFERENCE INTAKES FOR Water, Potassium, Sodium, Chloride, and Sulfate, 2005, covers the safety of potassium supplements.

Tankeu, Calcium supplementation and cardiovascular risk: A rising concern, 2017 covers concerns about adverse effects of calcium supplements.

Krill Oil

Of all the invertebrates, krill are richest in retinol, and krill oil contains between 130 and 770 IU per gram. The RDA for vitamin A is about 2300 IU per day for adult women and 3000 IU per day for adult men. It would take anywhere from 3 to 23 grams of krill oil per day to cover these needs alone. Krill oil supplements tend to contain 500 mg per capsule with a serving size of two capsules, providing one gram of oil. This presumably provides anywhere from 130 to 770 IU of retinol, but the retinol content of these supplements is neither standardized nor reported on the label. Unfortunately, there is no way to know how much vitamin A is provided by the amount of krill oil I recommended, but it seems clear that it will make some contribution to total retinol intake during Lent and has the potential to be meaningful, especially to people with poor carotenoid conversion.

Nutritional Needs of Different Life Stages

The Linus Pauling Institute has a series of articles on nutrition by life stage.

Masterjohn. Vitamins for Fetal Development: Conception to Birth. 2013.