

CARDIOMETABOLIC FOOD PLAN

Comprehensive Guide



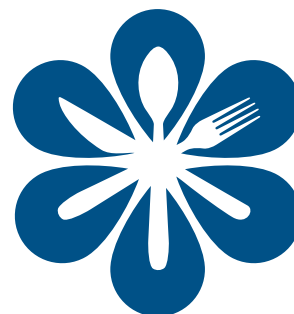


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Why the Cardiometabolic Food Plan?

The Cardiometabolic Food Plan is designed for the following individuals:

- **Those at risk for heart disease, also called cardiovascular disease (CVD)**
- **Those at risk for metabolic syndrome, type 2 diabetes, or both**
- **Those with CVD (e.g., high blood pressure, high cholesterol, and elevated blood fats)**
- **Those with metabolic syndrome (e.g., elevated blood sugar, increased waist size)**
- **Those with type 2 diabetes**

Fortunately, diet and lifestyle changes are very effective in preventing and treating all of these conditions. Some people may question why the same food plan is used to treat both cardiovascular and metabolic diseases. While they may seem to be different types of conditions, cardiovascular and metabolic diseases share similar causes, including inflammation, insulin resistance, and stress. This food plan is called “cardiometabolic” because it addresses both disease states. It allows people to use food to treat the common underlying causes of cardiovascular and metabolic diseases.



Features of the Cardiometabolic Food Plan

This food plan was constructed with the input of a team of physicians, nutrition professionals, and evidence from scientific studies. This comprehensive guide explains what makes this food plan ideal for those with cardiometabolic health conditions and also provides answers to common questions.

- **Modified Mediterranean Approach:** The traditional Mediterranean diet first attracted interest when it became apparent that people living on the Greek island of Crete had lower rates of heart disease. Since 1970, it is one of the most well-known, well-studied diets for heart disease, metabolic syndrome, and type 2 diabetes. While the Mediterranean region comprises 16 different countries, people in this region tend to eat a similar diet: whole, foods such as fruits, vegetables, whole grains, nuts, legumes, dairy, extra virgin olive oil, spices, modest amounts of poultry and fish, low amounts of red meat, and red wine. It is the combination of all these foods, rather than one of these, that is responsible for the health benefits of eating this way.

A review of studies on the Mediterranean diet reported that this way of eating improves parameters of metabolic syndrome such as waist circumference, HDL (good) cholesterol, blood fats, blood pressure, and blood sugar.

Those who prefer the cuisine of their own ethnic backgrounds (e.g., Hispanic, Indian, Chinese) can still choose to include foods from the Mediterranean diet. In this guide, there is a list of “Therapeutic Foods” which can be used in a variety of cuisines. For example, avocado oil can replace corn or soybean oils in cooking, and a broader array of spices can be added into native cuisines for more nutrient diversity. The key is to select whole, fresh, unprocessed foods whenever possible. This is truly one of the most important takeaways of the Mediterranean diet!

- **Low Glycemic Impact:** Not all foods have the same impact on blood sugar and insulin. Ideally, blood sugar should remain relatively constant, without huge spikes that cause insulin to surge. A roller coaster of high blood sugar and insulin levels throughout the day is not healthy in the long term, especially for those with heart, metabolic, or diabetic concerns. In fact, high blood sugar levels sustained over time can damage blood vessels, blood cells, and other parts of the body that are sensitive to high sugar like the eyes and kidneys. This is why eating foods that do not spike blood sugar is preferred on this food plan.



Features of the Cardiometabolic Food Plan

The goal of the Cardiometabolic Food Plan is to eat low-glycemic foods so that only small fluctuations in blood sugar and insulin levels are produced. Examples of low-glycemic foods include legumes (e.g., soy, kidney beans, lentils, chickpeas), nuts (e.g., almonds, walnuts), seeds (e.g., pumpkin, flax, sesame), most whole grains (e.g., oat, barley, spelt), and most vegetables and berries.

While low-glycemic foods are the best choices, most people will eat some medium-glycemic foods as well. One tip to remember is that medium, and high-glycemic foods should be eaten with protein or fat to balance the overall blood sugar impact of a meal. Examples of medium-glycemic foods include most whole-grain breads and grain products, brown rice, quinoa, beets, and bananas, to name a few.

Foods containing refined sugars and processed grains are considered to be high glycemic, because they lead to sharp increases in blood sugar levels. Examples include cakes, cookies, pies, white bread, and other processed foods. In general, processed foods tend to have a stronger impact on increasing blood sugar than fresh, whole foods.

Many vegetables and fruits are low glycemic, including broccoli, cabbage, cauliflower, celery, green beans, mushrooms, spinach, berries, and apples. The Cardiometabolic Food Plan provides a list of food choices that have a low, or moderate glycemic impact. Eating suggested portions of low and moderate glycemic foods helps to stabilize blood sugar throughout the day. When blood sugar is balanced, health is better overall.

- **Targeted Calories:** Many people prefer specific dietary guidance to provide more structure when starting a new food plan. A calorie target may be established, depending on a person's health goals. This calorie target is determined by many factors, including current body weight, basal metabolic rate, activity level, and risk factors for heart or other metabolic diseases. A targeted calorie plan can support weight loss when needed, and reduce the risk factors associated with many chronic diseases. It is best to work together with a practitioner to determine what is most suitable for one's own bodily needs, and health goals.
- **Balances Blood Sugar:** The average meal should aim to provide up to four hours of energy before feeling the need to eat again. A balanced meal will result in feeling satisfied, clear-headed, focused, and energized. If hunger, "brain fog", shakiness, or fatigue arises within an hour or so of eating, it may be that the meal was missing something - most likely quality protein, fat, or enough whole-food carbohydrates to keep blood sugar balanced. Low blood-sugar symptoms can be a response to eating larger portions of high glycemic foods, especially if protein and fat are not a part of the meal.



Features of the Cardiometabolic Food Plan

- **High in Fiber:** Along with the low glycemic features of this plan, eating whole, relatively unprocessed foods also helps individuals take in more dietary fiber and less added sugar. In the United States, the recommended amount of daily fiber is around 25 grams for women and 38 grams for men. Unfortunately, only about 5% of the population get the recommended amount of fiber daily. Fiber is found in plant-based foods like whole grains, nuts, legumes, vegetables, and fruits. It is a form of carbohydrate that the body is unable to digest, giving the sensation of fullness without many calories.

There are two types of dietary fiber—insoluble and soluble—and they have somewhat different benefits. Insoluble fiber can be found in the bran (outer coat) of vegetables and whole grains. This type of fiber acts like an “inner broom,” sweeping out debris from the intestine and prevents constipation. Soluble fiber attracts water and swells, creating a gel that helps the body bind cholesterol and toxins for elimination. The soluble fiber in foods like oat bran, barley, nuts, seeds, beans, lentils, peas, and some fruits and vegetables helps to lower cholesterol, balances blood sugar, and feeds healthy bacteria in the gut. Psyllium, the main ingredient of common fiber supplements, is a soluble fiber. Overall, eating more fiber has several benefits. One strategy is to aim for at least 5 grams of fiber per serving of a food, with a daily goal of 25–35 grams fiber per day.



- **Low in Simple Sugars:** Another feature of the Cardiometabolic Food Plan is the reduction of added sugars. Added sugars contribute a significant portion of calories to the American diet (e.g., soda). Eating processed foods with refined sugar, especially high-fructose corn syrup, has been associated with several heart disease risk factors, including elevated blood fats (triglycerides), low good cholesterol (HDL), increased blood sugar, and decreased insulin sensitivity. Refined sugars are prevalent in sodas, fruit drinks, sweetened tea, coffee drinks, energy or sports drinks, flavored milks, baked goods, and candy.

It is essential to refrain from added sweeteners as much as possible when following this food plan. High-intensity sweeteners are those that are sweeter than regular table sugar. These can lead to blood sugar imbalances, increased calories, weight gain, and cravings for sweets. Reading food labels is the best way to ensure that added sugars are not making their way into your diet.

When it comes to satisfying a sweet tooth, one of the best things to do on this plan is to stay close to nature by eating low-glycemic fruits like apples and unsweetened applesauce, and using apple juice concentrate for cooking and baking. The least recommended option is to use white table sugar and other processed forms of sweeteners. Artificial (synthetic) sweeteners should be completely avoided as these high-intensity sweeteners may have negative effects on metabolism and may contribute to cravings for sweets. Artificial sweeteners that should be avoided include high-fructose corn syrup, aspartame (NutraSweet®), sucralose (Splenda®), acesulfame-K (Ace K, Sweet One, Sunett), and saccharin (Sweet N’ Low®).

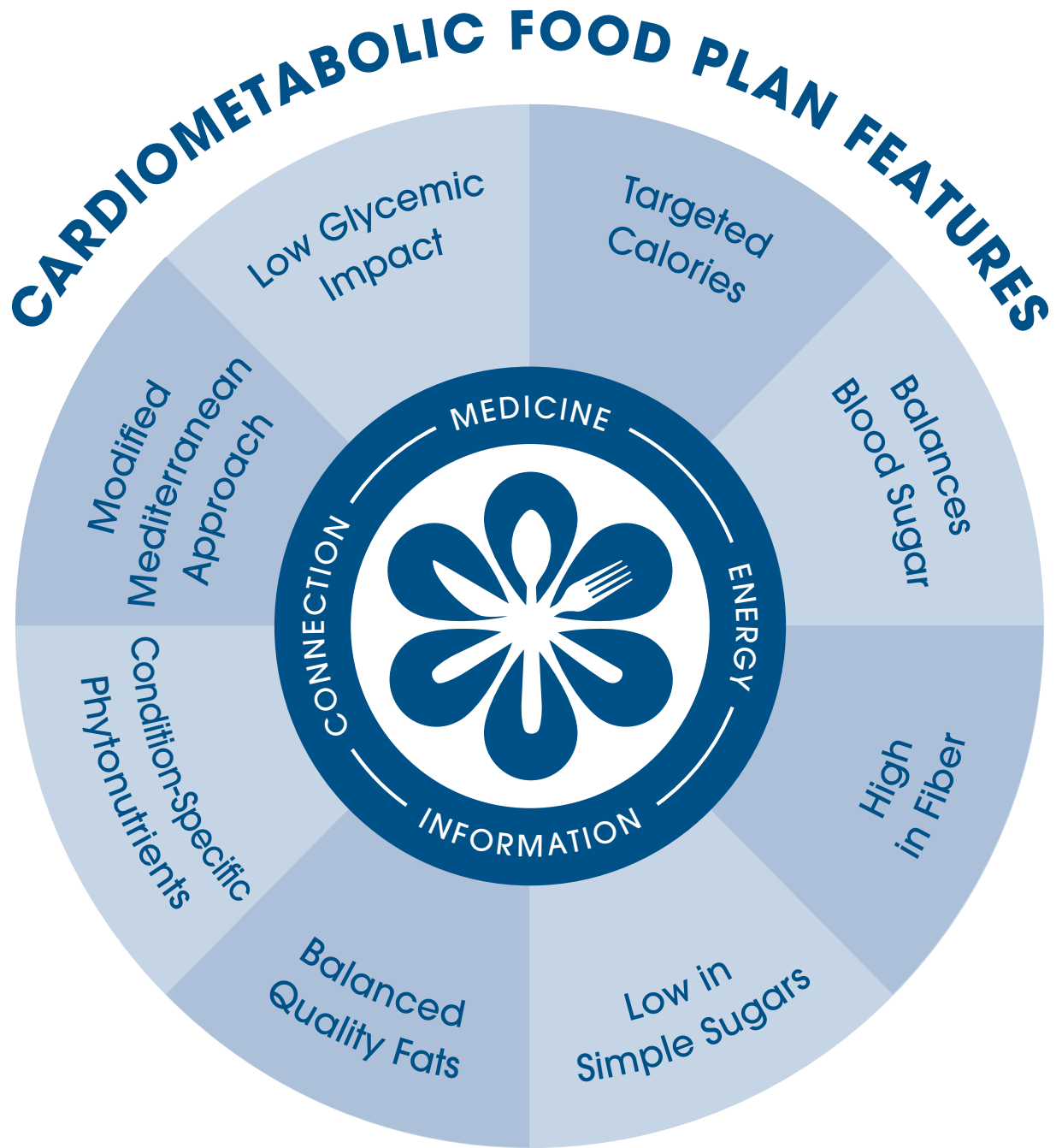


- **Balanced Quality Fats:** Dietary fats have a bad reputation when it comes to heart disease. Much of the research on the health benefits of dietary fats has found that what replaces dietary fat matters a great deal. For example, when saturated fat is replaced with refined sugar or trans-fats, heart disease outcomes are not good. Instead, replacing saturated fats with unsaturated (liquid fats) can lead to an overall improvement in heart and, overall health. The Cardiometabolic Food Plan focuses on incorporating a higher proportion of anti-inflammatory fats, like mono-unsaturated and poly-unsaturated fats, and limiting overall saturated fat. Extra-virgin olive oil is a rich source of monounsaturated fats and is associated with healthy inflammation and cholesterol levels. Research suggests that consuming minimally processed extra-virgin olive oil provides the greatest health benefits by increasing HDL (good cholesterol) and decreasing damage to blood vessels. Eating too much saturated fat (e.g., animal fat, butter, coconut oil), omega-6 fats (e.g., corn oil, soybean oil), and not enough omega-3 fats, can have an “inflammatory” effect. This can be offset by adding “anti-inflammatory” fats to the diet. Anti-inflammatory fats have a higher concentration of omega-3 fatty acids and include foods like oily fish, leafy greens, nuts, extra-virgin olive oil, and seeds. Organizations like the American Heart Association have recognized the health benefit of these anti-inflammatory foods and encourage individuals to include more omega-3 fats and decrease saturated fats. For those with specific health concerns such as high blood fats (triglycerides), low HDL, supplementation with fish oil – an excellent source of omega-3 fats, may be recommended.
- **Condition-Specific Phytonutrients:** Plant foods contain thousands of compounds that affect body function. While thousands of these compounds have been identified, it has been suggested that many more remain to be discovered. The average person eats only a small amount of such phytonutrients every day. Several of these, such as the bitter compounds in arugula and other green leafy vegetables, the resveratrol in grapes and red wine, and the astringent compounds in green tea appear to work favorably on cells to promote heart health. Certain phytonutrients can support blood sugar regulation, lower LDL-cholesterol, and even help to get blood pressure back into a healthier range.

Here are some specific phytonutrients in the food plan and how they can help:

- **Phytonutrients that assist in blood sugar balance:** cinnamaldehyde in cinnamon, isoflavones from soybeans, and beta-glucan from oats and barley
- **Phytonutrients that protect LDL cholesterol from damage:** Carotenoids including lycopene from tomatoes, grapefruit, and watermelon, polyphenols from green tea, isoflavones from soybeans, polyphenols from dark chocolate and pomegranate
- **Phytonutrients that support blood pressure:** Sulfur compounds from garlic, beta-glucan from whole oats, isoflavones from soybeans, polyphenols from pomegranate juice and dark chocolate





Touring Through the Food Plan

The Cardiometabolic Food Plan provides a list of available food choices that people are encouraged to choose from every day. Your healthcare provider may recommend a calorie target and a specific number of selections within each food category. A general description of the food categories below provides a foundation for any calorie-specific plan. Several foods in each category are highlighted as “Therapeutic Foods” and each section explains why they are preferable options.

Cardiometabolic Food Plan		VEGETABLES Non-starchy		VEGETABLES Starchy		WHOLE GRAINS (100%)	
Proteins	Fats	Carbs	Carbs	Carbs	Carbs	Carbs	Carbs
<p>Proteins</p> <p>Servings/day _____</p> <p>Lean, free-range, grass-fed, organically grown animal proteins; non-GMO, organic plant protein; and wild-caught, low-mercury fish preferred.</p> <p>Animal Proteins:</p> <ul style="list-style-type: none"> Chicken (low-fat)-1 oz Chicken, Cornish hen, duck, pheasant, turkey, etc.-1 oz Feta cheese (low-fat)-½ oz Goat cheese (low-fat)-1 oz Parmesan cheese-2 T Ricotta cheese (low-fat)-½ oz Egg-1 or 2 egg whites Fish/Shellfish: Halibut, herring, mackerel, salmon, sardines, tuna, etc.-1 oz Meat: beef, buffalo, elk, lamb, venison, other wild game-1 oz <p>1 serving as listed = 35-75 calories, 5-7 g protein, 3-5 g fat, 0-4 g carbs</p> <p>LEGUMES</p> <p>Servings/day _____</p> <p>Organic, non-GMO preferred</p> <ul style="list-style-type: none"> Bean soup-½ c Black soybeans (cooked)-½ c Dried beans, lentils, peas (cooked)-½ c Edamame (cooked)-½ c Flour, legume-½ c Green peas (cooked)-½ c 	<p>Fats</p> <p>Servings/day _____</p> <p>Minimally refined, cold-pressed, organic, non-GMO preferred</p> <ul style="list-style-type: none"> Avocado-2 T or ½ whole Butter-1 T, 2 T, or 1/4 cup Chocolate, dark (70% or higher cocoa)-1 oz Coconut milk, regular (canned)-½ T Coconut milk, light (canned)-3 T Ghee (clarified butter)-1 T Mayonaisse (unweetened)-1 T Olive: Black, green, kalamata-1 T <p>1 serving = 45 calories, 5 g fat</p> <p>Items in blue indicate preferred therapeutic foods</p> <p>IFM</p>	<p>Carbs</p> <p>Servings/day _____</p> <p>Artichoke</p> <ul style="list-style-type: none"> Asparagus Bamboo shoots Beets (cubed) Bok choy Broccoli Broccoli sprouts Cabbage Carrots Cauliflower Celery root Celery Chard/Swiss chard Chervil Chinese cabbage Chives Calabro Cucumbers Dakota radishes Eggplant Endive Escarole Fennel Fermented vegetables, Kimchi, pickles, sauerkraut, etc. Green beans Greens: Beal, collard, dandelion, kale, mustard, turnip, etc. <p>1 serving = 1 c, 1 c raw greens = 25 calories, 5 g carbs</p> <p>Organic, non-GMO fruits, vegetables, herbs and spices preferred</p>	<p>Carbs</p> <p>Servings/day _____</p> <p>Acorn squash (cubed)-1 c <p>Butternut squash (cubed)-1 c <p>Plantain-½ c or ½ whole <p>Potatoes: Purple, red, sweet, yellow-½ med <p>1 serving = 40 calories, 10 g carbs</p> <p>Low Glycemic Impact Recommendations</p> <p>Short term: Consider removal</p> <p>Long term: Limit to 1 serving per day</p> <p>FRUITS</p> <p>Servings/day _____</p> <p>Unsweetened, no sugar added</p> <ul style="list-style-type: none"> Apple-1 med Apricots-4 Bananas-½ med Blackberries-½ c Blueberries-½ c Cherries-12 Grapefruit-½ Grapes-15 Kiwis-1 med Mango-½ med Melon, all-1 T Nectarine-1 med Orange-1 med Papaya-1 c Peach-1 Pear-1 med Persimmon-½ Pineapple-½ c Plum-2 med Pomegranate seeds-½ c Raspberries-1 c Strawberries-½ c Tangerines-2 med <p>1 serving = 60 calories, 15 g carbs</p> <p>Low Glycemic Impact Recommendations</p> <p>Limit to 2 servings per day</p> <p>Avoid dried fruit and fruit juices</p> </p></p></p></p>	<p>Carbs</p> <p>Servings/day _____</p> <p>Unsweetened, sprouted and organic preferred</p> <p>Gluten-Free:</p> <ul style="list-style-type: none"> Amaranth-½ c Buckwheat Kasha-½ c Millet-½ c Oats (rolled, steel-cut)-½ c Quinoa-½ c Rice: Basmati, black, brown, purple, red, wild-½ c Sorghum-½ c Teff-½ c <p>All grain servings are for cooked amounts</p> <p>1 serving = 75-110 calories, 15 g carbs</p> <p>Low Glycemic Impact Recommendations</p> <p>Short term: Consider removal</p> <p>Long term: Limit to 1-2 servings per day</p> <p>BEVERAGES, SPICES & CONDIMENTS</p> <p>Unsweetened, no sugar added</p> <ul style="list-style-type: none"> Beetroot juice Filtered water Sparkling/mineral water Green tea Herbs and Spices: Cayenne, cinnamon, garlic, organic, etc. Condiments: Lemon/lime juice, miso, mustard, tamari, vinegars, etc.- use sparingly, sugar 1 T or less per serving <p>Items in blue indicate preferred therapeutic foods</p> <p>IFM</p>			

Protein

Protein stabilizes blood sugar and should be included in every meal. In fact, unless there are medical restrictions, protein should provide about one-third of the daily calories. Yet in the average Western person’s diet, protein comprises only about one-fifth of the total calories. Choose oily fish which are high in anti-inflammatory fats and low in mercury, such as anchovies, herring, mackerel, salmon, sardines, and trout. Additional protein options include lean meats, like poultry, hard cheeses, and free-range eggs. The Therapeutic Foods in this category are fish and soy-containing proteins, which provide lean protein and anti-inflammatory fats for heart health.

Therapeutic Foods: Omega-3 rich fish, and soy-based foods such as miso, tofu, tempeh, and soy protein.

Legumes

Legumes are a perfect way to get quality protein and complex carbohydrates, both of which will help create a feeling of fullness and help keep blood sugar in a healthy range. It is recommended to eat at least 1 serving of legumes each day in the form of soup, cooked beans, dips, or hummus. The Therapeutic Foods in this category are conveniently found in the frozen section of the grocery store and are a great, high-protein snack choice.

Therapeutic Foods: Organic Edamame (green soybeans), organic black soybeans.



Dairy and Alternatives

Your healthcare practitioner will advise whether or not to consume non-fat or low-fat dairy products. Too much animal fat in the diet is not heart healthy; however, there are some important types of fats in dairy (e.g., conjugated linoleic acid) that may be protective for the heart. Therefore, it is worthwhile to talk with your functional medicine provider about whether or not dairy is advisable for you. In this plan, there is no guidance on fat content of dairy products on the food list. The Therapeutic Foods include soy milk, and probiotic-containing foods to keep the gut healthy.

Therapeutic Foods: Soy milk, yogurt, kefir.

Nuts & Seeds

Nuts and seeds provide a variety of options to choose from when a snack is needed throughout the day. They can also be sprinkled on top of salads, cereals, or vegetables. Try for at least 1 to 2 servings of nuts and seeds on a daily basis. Aim for a mixed blend of unsalted nuts that are not roasted in oil. Pumpkin seeds can be stirred into oatmeal; tahini (sesame seed butter) can be drizzled over vegetables; almond butter can be spread on an apple slice or cashew nut butter on a sliver of pear. Incorporate some of the Therapeutic Foods from the nuts and seeds category every day.



Therapeutic Foods: Flaxseed, unsalted mixed nuts, and unsalted soy nuts.

Fats & Oils

Fats and oils should contribute up to one-third of daily calories, with less coming from saturated fats. It is advised to refrain from eating trans and partially hydrogenated fats, which are typically found in highly-processed snack foods like potato chips, baked goods, and fast food. Several servings of the Therapeutic Foods in this category should be eaten every week. Store oils in dark glass containers in a cool place, and always discard if they smell rancid. Canned coconut milk is included in this category because it is predominantly a fat (not a dairy alternative) when purchased in the can. The processed, boxed variety of coconut milk is a dairy alternative because it is lower in fat and contains some carbohydrate.

Therapeutic Foods: Avocado, avocado oil, olives (black or green), and extra-virgin olive oil.

Non-Starchy Vegetables

This category of foods provides medicinal compounds that reduce the risk of heart and metabolic diseases. Try for a wide variety of vegetables, particularly those that are “new” or unfamiliar, aiming for at least 9 servings per day.

A serving is $\frac{1}{2}$ cup of cooked vegetable or 1 cup of raw, leafy greens. The leafy green vegetables in this category are Therapeutic Foods because they contain a number of nutrients, like magnesium and folate, to support cardiometabolic health. Many of these foods found in the Mediterranean diet have been shown to help lower blood pressure by relaxing blood vessels, reducing inflammation, and protecting the lining of blood vessels.



Touring Through the Food Plan

Vegetables juices that contain the vegetables' fiber are preferred to help prevent blood sugar fluctuations. If buying pre-made tomato juice or others, read the ingredient labels to avoid added sugars and salt.

Therapeutic Foods: All greens such as beet, collard, dandelion, kale, mustard, turnip, chard/Swiss chard, and spinach, plus garlic, onions, and tomatoes.

Starchy Vegetables

Depending on the recommended calorie target, starchy vegetables should be limited to 1 serving per day as they tend to impact blood sugar. Only moderate-glycemic starchy vegetables are included on this list. High-glycemic vegetables like white potatoes are not included in the food list, as they can cause spikes in blood sugar. Sweet potatoes or purple potato varieties provide a lower-glycemic alternative. Beets are rich in heart healthy phytonutrients which help to protect the health of blood vessels, thus they are considered a Therapeutic Food.



Therapeutic Foods: Beets.

Fruits

Low- to moderate-glycemic fruits will hit the spot when the need for something sweet arises. Two servings per day (on a lower calorie plan) are recommended. The Therapeutic Foods in this category contain important phytonutrients that relax blood vessels and help with blood sugar control. It is recommended that blueberries and pomegranate be included on a regular basis because of their therapeutic benefits. It's always better to eat fruit with a little bit of protein for blood sugar balance.

Therapeutic Foods: Blueberries, pomegranate.

Whole Grains

Whole grains—those with an intact bran, or outer coat—are highly recommended for those with cardiometabolic diseases, as they provide an excellent source of fiber and other phytonutrients that lower cholesterol and stabilize blood sugar. Oats and barley, the two Therapeutic Foods in this category, contain beta-glucan to help support cholesterol and blood sugar. Although these are important foods for people with heart and metabolic disease, grains can also be overeaten, particularly in their processed forms. It is best to limit grains (depending on calorie target) to 1 to 2 servings per day. Patients with celiac disease or gluten intolerance should refrain from eating gluten-containing grains like barley, rye, commercial oats, wheat, and spelt.

Therapeutic Foods: Oats, barley.



Therapeutic Foods for Cardiometabolic Health

All the foods on this plan are encouraged unless there is a known allergy or sensitivity to a specific food. Some of the foods on this plan are highlighted below as Therapeutic Foods because of their benefits for heart disease, metabolic syndrome, and type 2 diabetes.

- **Avocado:** An avocado is an ideal food for heart health as it contains a considerable amount of fiber (about 9 grams in a whole avocado), healthy monounsaturated fat, and potassium (almost 700 mg for a whole avocado). Avocados can be enjoyed on salads, added to smoothies, mashed into guacamole, and many other ways.
- **Extra-virgin olive oil (EVOO):** One of the main foods of the Mediterranean diet which has intrigued researchers is EVOO. People with heart disease who incorporate more EVOO in their diet experience improved blood vessel health and reduced inflammation. When choosing olive oil, “extra virgin” is important to look for, as many studies have shown that EVOO is more beneficial than other types of olive oil. Unfiltered or unrefined EVOO is preferable, because it contains more polyphenols and antioxidants that may help prevent heart disease and lower blood pressure.
- **Olives:** Olive oil is a therapeutic food for those with heart disease, and so are olives. Research indicates that there are several healthful compounds in olives. One compound – hydroxytyrosol, may prevent heart disease by reducing plaque build up and hardening of the arteries. It may also prevent damage of LDL-cholesterol. Some of the phytonutrients in olives make their way into the oil and is what makes EVOO so heart healthy!
- **Ground flaxseed:** Flaxseeds are one of the richest plant sources of anti-inflammatory omega-3 fats. However, for proper digestion and absorption of these omega-3s, flaxseeds have to be ground or milled into flaxseed meal. Flaxseeds can be easily ground with a small coffee grinder and blended into smoothies, sprinkled onto warm cereal, or baked into healthy muffins. Alternately, pre-ground flaxseed meal can be bought at the grocery store. Store flaxseed meal in the freezer to keep it from turning rancid.

In addition to containing omega-3 fats, ground flaxseed meal is an excellent source of fiber and the best known food source of lignans. Lignans are antioxidants and contain phytoestrogens – both help to prevent heart disease and insulin resistance. One study showed that eating about 4 tablespoons of ground flax meal daily lowered blood pressure, lowered blood sugar, and reduced belly fat.

- **Nuts:** Mixed nuts (especially walnuts and almonds) contain healthy fats along with phytochemicals like plant sterols (plant compounds that lower cholesterol), polyphenols, antioxidants, and fiber. When mixed nuts replace sources of saturated fat in the diet at 1 to 2 ounces of nuts daily, they reduce heart disease risk by lowering “bad” LDL-cholesterol by 2 to 19%. They also help reduce damage of LDL cholesterol, improve blood vessel relaxation, and quell inflammation.



- **Quality soy products (miso, tofu, edamame, soy protein, soy nuts):** High-quality, organic soy is recommended on this food plan. Soybeans contain polyunsaturated fat, fiber, vitamins, minerals, and isoflavones, all of which make them an ideal food for heart health. A review of published studies indicated that eating soy was associated with a significant decrease in blood pressure in individuals with high blood pressure. In people at risk for heart disease, eating soy correlated with improvements in blood vessel expansion and reduced thickness of the carotid artery. It has also been suggested that soy isoflavones help to reduce artery stiffness.

Choose high-quality soy, minimize processed soy products like soy dogs, other soy meat substitutes, and soy candy bars, which tend to be highly processed with higher amounts of salt and other additives. In addition, make sure that soymilk is unsweetened. Another way to incorporate more soy into your diet is to try roasted soybeans, or “soy nuts,” as a snack.

- **Fish:** Research studies support eating fish for heart health. A modest consumption of 1 to 2 servings per week of oily fish, such as wild salmon, herring, or sardines, may reduce a person’s risk of heart-related death by up to 36%. Those who eat 5 or more servings of fish per week are advised to eat a variety of seafood, limiting high mercury-containing fish like tuna, sea bass, and swordfish.
- **Leafy greens:** When it comes to heart disease, green leafy vegetables are important because they supply a plant source of nitrates, a compound that opens up blood vessels. It has been estimated that 1 serving of a high-nitrate vegetable, like spinach, results in more nitric oxide production than what is naturally produced in the body in one day! Other foods that are particularly high in dietary nitrate include celery, Chinese cabbage, endive, fennel, kohlrabi, leek, lettuce, parsley, red beets, spinach, and arugula. The best lettuce choices are those that are darker green or magenta in color. In addition to containing nitrates, leafy greens are a good source of folate. Folate has been associated with reduced risk of stroke and heart disease.
- **Onions:** Onions rank as one of the best sources of anti-inflammatory and antioxidant phytonutrients, particularly quercetin. In addition, they contain detoxifying sulfur-containing compounds, which enable the body to excrete toxins more effectively.
- **Tomatoes:** One staple of the Mediterranean diet is tomatoes. Cooked tomatoes, are an excellent source of lycopene, an important antioxidant. They also contain other heart-protective phytonutrients like beta-carotene and vitamin E. Those who are sensitive to the nightshade family of plants should avoid eating tomatoes.
- **Yogurt and kefir:** Foods that contain live cultures (“probiotics”) help in establishing healthy gut microflora. Some research suggests that the quality of the bacteria in the gut plays a role in inflammation, weight, and even cholesterol levels in the blood.



- **Blueberries:** Blueberries are packed with healthy phytonutrients for the heart and blood vessels. Studies show that the phytonutrients in blueberries help to keep blood vessels open and even lower heart attack risk. They may also help with blood sugar control in those with diabetes. Blueberries are low-glycemic, and have one of the highest antioxidant levels among all fruits and vegetables. Choose organically-grown berries whenever possible.
- **Pomegranate:** While it is advised to avoid fruit juices on this plan, there is one exception to the rule: unsweetened pomegranate juice. Studies indicate that small amounts of pomegranate juice (under 2 ounces) has been shown to help reduce blood fats, blood pressure, and plaque buildup in arteries.
- **Barley:** Barley has a rich nut-like flavor and chewy consistency. It contains many important heart health components while also being low-glycemic. Barley is high in beta-glucan, a fiber that may help lower cholesterol, blood glucose, and improve the way insulin works in the body. Beta-glucan is also able to modify cholesterol in a favorable way to reduce the risk of heart disease. Those with gluten intolerance or celiac disease should refrain from eating this gluten-containing grain.
- **Oats:** Similar to barley, oats contain fiber, phytochemicals, and the beta-glucans that help reduce levels of both cholesterol and blood sugar. What makes oats unique relative to barley is the presence of antioxidant compounds which help prevent cellular damage within the body. Whole grains such as oats are an excellent source of magnesium, an important mineral in the regulation of blood sugar and insulin.
- **Green Tea:** Drinking green tea has been shown to reduce blood pressure and blood fats (triglycerides, cholesterol, and LDL-cholesterol) and may even help with lowering blood sugar. While studies vary in the amount and type of green tea used, the general recommendation is based on the amount typically consumed in Asian countries, which is about 3 cups per day. Talk with your functional medicine practitioner as to whether the caffeinated or non-caffeinated variety is best for you.
- **Cocoa:** This plan includes dark chocolate (70% cocoa and higher) because of phytonutrients in cocoa which appear to be helpful in keeping arteries open and protected from damage. The healthy way to eat chocolate is to make sure it's somewhat bitter with a higher percentage of cacao and minimal sweeteners. Dark chocolate has caffeine, so caffeine-sensitive people may enjoy smaller amounts. One square of baker's chocolate per day has been shown in studies to have health benefits.



Condition-Specific Therapeutic Considerations

If you have...	Reduce these foods	Increase these foods
High Blood Pressure	<ul style="list-style-type: none"> ■ Sodium (limit to 1,500 milligrams—less than 1 teaspoon per day) ■ Processed foods and frozen meals ■ Fast foods ■ Fatty meats ■ Full-fat dairy products ■ Soft drinks ■ Added sweeteners ■ Caffeinated beverages ■ Alcohol ■ Saturated fats (e.g., butter, coconut oil) 	<p>Proteins:</p> <ul style="list-style-type: none"> ■ Soy (fermented): natto, tofu, tempeh, miso ■ Legumes ■ Cold water fish: sardines, herring, haddock, salmon, or trout ■ Mixed nuts (unsalted) ■ Dark chocolate (about 1 square) <p>Vegetables and Fruit:</p> <ul style="list-style-type: none"> ■ Blueberries ■ Seaweed (hijiki and wakame) ■ Garlic ■ Mushrooms ■ Celery ■ Foods high in lycopene: tomatoes, guava, watermelon, apricots, pink grapefruit, papaya ■ Pomegranate juice <p>Fats and Oils:</p> <ul style="list-style-type: none"> ■ Olive, flaxseed, and sesame oils <p>Carbohydrates:</p> <ul style="list-style-type: none"> ■ Increase high-fiber whole grains: oatmeal, oat bran, barley ■ Fiber: psyllium
Metabolic Syndrome	<ul style="list-style-type: none"> ■ Sucrose, fructose, and high-fructose corn syrup ■ Processed foods ■ Refined carbohydrates like white-flour breads, and pasta ■ Fast foods ■ Saturated fats (e.g., butter, coconut oil) ■ Over-cooked foods (e.g., meats) ■ Food or drink in plastic containers ■ Large meals (aim for smaller meals) ■ Eggs (less than one per day) ■ Fruit juices 	<ul style="list-style-type: none"> ■ Extra-virgin olive oil ■ Cinnamon ■ Green tea ■ Mixed nuts (unsalted) ■ Omega-3 fat sources from food and supplement (as directed by your provider) ■ Fiber sources such as whole grains, legumes, flax seeds, berries
High Cholesterol High Triglycerides	<ul style="list-style-type: none"> ■ Processed foods (packaged, canned) and frozen meals ■ Fast foods ■ Fatty meats ■ Full-fat dairy products ■ Soft drinks ■ Refined carbohydrates ■ Alcohol ■ Saturated fats (e.g., butter, coconut oil) ■ Trans fats (found in processed foods) ■ Margarine 	<ul style="list-style-type: none"> ■ Oily fish (salmon, sardines) ■ Fiber ■ Green leafy vegetables ■ Low-glycemic fruits ■ Tomatoes ■ Extra-virgin olive oil ■ Green tea ■ Soybeans (e.g., soymilk, tofu, tempeh) ■ Dark chocolate ■ Pomegranate ■ Seeds and nuts ■ Garlic ■ Rice bran oil



What are the best sweeteners?

As much as possible, it is recommended to avoid added sweeteners due to the negative effects that sugar can have on blood vessels and other body organs. When sweet cravings arise, choose from the low to moderate-glycemic fruits listed on the Cardiometabolic Food Plan. Eating an apple with almond butter or fresh blueberries with unsweetened yogurt can help satisfy a sweet tooth. This plan does not include artificial sweeteners. Stevia may be used in small amounts, as needed.

What drinks are allowed?

Filtered water should be the primary source of hydration throughout the day. Active individuals or those living in warm climates may need to be more proactive about staying hydrated. Unsweetened teas, such as green, mint, chamomile, or hibiscus, are also good choices as they provide flavor and therapeutic compounds. Typical recommendations for herbal or green tea are 1–3 cups per day. Caffeine-sensitive individuals may be advised to drink decaffeinated varieties of green tea. Broths and unsweetened vegetable juices are also appropriate on this food plan.

What about eating eggs?

There is an ongoing debate about eggs, particularly when it comes to heart disease. Originally it appeared that the cholesterol in eggs made blood cholesterol rise, but later studies have been conflicted. Dietary preferences and health risks should be considered when deciding whether or not to include eggs on this plan. For some, one egg per day may be appropriate and for others, egg whites may be best. Some research does suggest that it is better for those with diabetes to have fewer eggs, typically less than one per day.

What condiments are acceptable?

Many condiments, such as teriyaki sauce, ketchup, barbecue sauce, and glazes, have sugar added. It would be best to avoid them entirely and to make homemade versions that are healthier. Adding more herbs and spices to foods can replace many store-bought condiments.

What about drinking alcohol?

The alcohol question frequently surfaces when talking about the Mediterranean diet, which includes red wine. There are phytonutrients present within red wine, such as resveratrol, that help to relax blood vessels, increase good cholesterol, and support blood sugar balance. However, red wine also contains sugar and calories, and may not be good for everyone. Your healthcare practitioner, who knows your health history can make a recommendation as to whether moderate or occasional alcohol would be appropriate for your health goals. For a generally healthy man, 1 to 2 glasses (5 ounces or $\frac{2}{3}$ cup) of red wine, depending on body weight may be perfectly acceptable at meals. Women should be advised to have just 1 glass of wine no more than four times a week due to the recognized association between breast cancer and increased alcohol consumption.



What about drinking coffee and tea?

The answer to whether or not to drink caffeinated coffee or tea is not so straightforward. In general, studies show that the short-term effects of caffeine include tightening of blood vessels, resulting in increased blood pressure. Caffeine also increases cortisol, a stress hormone, so it can make some people feel wired and “on edge.” For some, caffeine can cause a speeding heart rate and abnormal heart rhythms.

On the other hand, the phytonutrients in coffee, like chlorogenic acid and caffeic acid, may help the liver process blood sugar more efficiently. Drinking up to 3 cups daily has been shown to be associated with lower rates of type 2 diabetes. You should talk to your functional medicine provider if you are unsure whether or not coffee and other caffeinated beverages are right for you. It is recommended that you avoid creamers with artificial sweeteners and sugar. Instead, use plain dairy or dairy alternatives such as almond, flaxseed, oat, and soy milks.

Green tea may be a better option for most people. It contains caffeine, but not as much as a typical cup of coffee, and it is available in non-caffeinated varieties. Green tea contains phytonutrients that are anti-inflammatory, helping to support blood sugar balance, lower blood fats, and relax blood vessels. Drinking both green and black teas has been associated with reduction in the risk of heart disease and stroke by 10% to 20%. Three cups per day appears to provide the most benefit in blood pressure lowering and reducing heart disease risk overall.

Why is coconut oil on this plan? Isn't it bad for the heart?

Extra-virgin olive oil, and avocado oil, should be the staples for salad dressings and cooking, but very small amounts of coconut oil can also be used. Research indicates that coconut oil may have some merit as it has a modest beneficial effect on HDL (good) cholesterol. Too much coconut oil, however, can raise LDL (bad) cholesterol. Coconut oil should be used occasionally, and in small amounts, by those who do not have high LDL (bad) cholesterol.

How can this plan become even more personalized?

Functional medicine providers can customize the Cardiometabolic Food Plan for those who want or need to also follow vegetarian, pescatarian, low-carbohydrate, and gluten-free diets.

Genetic testing can be done to identify variations in certain genes related to cardiometabolic health. This allows your practitioner to consider genetics as one factor in personalizing this food plan. The results from genetic testing should be considered along with your dietary preferences, blood labs, and health history.

Your healthcare provider may schedule ongoing “check ins” to discuss what is working well and what needs more support (e.g., meal planning, recipe selection, integrating meals with family, and assessing how you feel emotionally and physically).

The Cardiometabolic Food Plan is intended to be a phytonutrient-dense, metabolically-balanced approach to enabling the body to more effectively regulate inflammation, blood sugar, insulin, and metabolism. It works best when you and your healthcare provider work together to personalize this plan for your preferences and lifestyle. To make the transition seamless, there are a number of other tools to help in the process.

The following handouts are available from functional medicine healthcare practitioners to assist you in following IFM's Cardiometabolic Food Plan:

- Cardiometabolic Food Plan – Food List
- Cardiometabolic Food Plan – Weekly Planner and Recipes

Disclaimer

The Cardiometabolic Food Plan is best followed under the supervision of a qualified nutritionist or healthcare professional who is experienced in this specialized area.

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