

Examine.com

Cardiovascular & Heart Health

Written by the Editors of Examine.com

Updated June 24, 2014

Medical Disclaimer & Important Note

This guide is a general health-related information product, intended for healthy adults over the age of 18.

This guide is for educational purposes only. It is not medical advice. Please consult a medical or health professional before you begin any exercise, nutrition, or supplementation program, or if you have questions about your health.

Participating in exercise activities or using products mentioned in this guide may pose risks for people in poor health or with pre-existing physical or mental health conditions.

Do not use any products or participate in any activities if you are in poor health or have a pre-existing mental or physical health condition. If you choose to participate, you do so of your own free will, and you knowingly and voluntarily accept the risks.

While we will mention major known drug interactions, it may be possible for any supplement to interact with medications or other drugs. If you are currently taking medication, consult a health professional prior to using any supplement in this guide.

Specific study results described in this guide should not be considered representative of typical results. Not all supplements provide the exact amount of compounds as listed on the label. Always investigate supplement companies, as well as the supplement itself, before purchasing anything. Herbs, rather than isolated compounds, may also have some variability from one batch to the next that can alter the efficacy.

To read the evidence supporting claims mentioned in this guide, please visit [Examine.com](https://www.examine.com).

Table of Contents

04	How to use this Guide
05	Base Supplements
09	Proven Options
14	Unproven Options
16	Cautionary & Overhyped Options
17	Assembling Your Supplement Stack
20	Stack Modification FAQ
22	Precautions & Troubleshooting

How to use this Guide

The team at Examine.com has been publishing research on nutrition and supplementation since March 2011. In that time, we've learned a great deal about supplements, especially how they can work together to help you with health goals.

This stack guide help you figure out which supplements can help you and which will hinder and/or be a waste of your money for your desired goals.

The following four sections present information on supplements that are relevant to *Cardiovascular & Heart Health*:

1. Base Supplements
2. Proven Options
3. Unproven Options
4. Cautionary and Overhyped Options

Base Supplements are recommended for the majority of people with this goal. They are either effective on their own or are required to boost the effects of another supplement. These are the first supplements to consider for your stack. Base Supplements are more researched and have less adverse drug interactions than options.

Proven Options are supplements that will provide a lot of benefits, but only in the right context. They cannot be recommended for everyone, but if you read the entry and find that you meet the criteria, feel free to add the supplement to your stack.

Unproven Options are another group of potentially beneficial supplements, but they lack evidence for their effects. They cannot be recommended with the same confidence as proven options. They could work or be a waste of your money - there is not enough evidence to know for sure. Keep unproven options in mind, but approach them cautiously when incorporating them into your stack.

Cautionary and Overhyped Options are supplements that are claimed to provide benefits but have been shown to be ineffective. If a supplement is deemed too risky to be used, it will also be found in this section. **Do not** add these compounds to your stack; they tend to be a waste of money or potentially harmful to your health.

Once we have explained the various supplements that you need to be aware of, the **Assembling your Supplement Stack** section will outline how different supplements can be combined, based on your objectives.

After that, we follow up with the **Stack Modification FAQ**, in which we cover common questions that may arise when assembling your stack.

Lastly, we include information on **Precautions and Troubleshooting**.

With all this combined, you should be able to identify and assemble a supplement stack best suited for your goals and objectives.

Procyanidins

Why you should take it

Procyanidins are a class of supplements that share similar flavonoid structures. Procyanidin supplementation can improve blood flow and circulation.

Procyanidin supplementation can help maintain nitric oxide (NO) levels. Low NO levels can cause blood vessels to narrow, leading to reduced blood flow. This makes procyanidins a good preventative supplement for high blood pressure. It can also alleviate high blood pressure caused by low NO levels. Keep in mind, not all cases of hypertension, or high blood pressure, are related to NO.

Procyanidins include the polyphenols in [cocoa](#), [grape seed extract](#), and the brand name product [Pycnogenol](#), also known as pine bark extract. Pycnogenol is the most well researched procyanidin source, though it is also the most expensive. Grape seed extract is a similar compound. It has less evidence for its effects, but is also less expensive. Cocoa has a different set of procyanidins but provides similar benefits.

How to take it

The standard procyanidin dosage depends on the form of supplementation.

To supplement Pycnogenol, take 100 – 200 mg a day. Doses as low as 40 – 60 mg have also been used, though they provide fewer benefits.

To supplement grape seed extract, take 150 – 300 mg a day.

The standard dose for cocoa polyphenols is 1,000 mg. To get cocoa polyphenols through the diet, eat approximately 25 g of dark chocolate a day. This is not needed if you choose one of the other procyanidin options. Milk or white chocolate is not a source of polyphenols.

Garlic

Why you should take it

Garlic is a food product and supplement known for its ability to boost the immune system and provide a variety of cardiovascular benefits.

Garlic can improve blood flow without affecting blood pressure because of its dietary sulfur content. Sulfur can improve hydrogen sulfide signaling, which leads to better circulation.

Garlic also supports nitric oxide (NO) signaling, which can improve the effects of procyanidins.

People with normal blood pressure will experience improved blood flow from eating garlic, while people with high blood pressure will also experience a reduction in blood pressure, in addition to the improved blood flow.

Garlic is also good for people with abnormal cholesterol levels. It can reduce low density lipoprotein (LDL) cholesterol and increase high density lipoprotein (HDL), which is sometimes called the “good” cholesterol. Garlic protects arteries from plaque buildup and calcification, preventing excess minerals from stiffening the blood vessels.

Garlic is a base supplement because of the variety of ways it can benefit the circulatory system. When used properly, it is safe and makes a good base for a heart health stack.

How to take it

Garlic can be eaten or supplemented. Both methods of ingestion will provide the same benefits. Supplementation is recommended for people that dislike the smell or taste of garlic. Supplementation of aged garlic extract will prevent the bad breath that comes from eating garlic cloves.

Garlic has blood thinning and antiplatelet effects. Garlic should be ingested cautiously if you are taking blood thinning medication like warfarin.

To maximize garlic's benefits, eat three cloves a day, split between several meals. The cloves may be eaten raw or cooked, but they should not be boiled or otherwise heated before they are cut. Crushing garlic before heating will activate its bioactive compounds.

To supplement garlic, take 600 – 1,200 mg of aged garlic extract a day, split into several doses and taken with meals.

Nitrate

Why you should take it

Nitrates are a dietary compound found in beets and leafy green vegetables. Due to restrictions surrounding sodium nitrate, a compound often added to meat, supplements containing effective doses of nitrates are not legal. Nitrates must be consumed through food products.

Nitrates break down into nitrites after they're ingested, which circulate in the body and are turned into nitric oxide (NO) as needed. Elevated NO levels are associated with improved exercise performance, blood flow, and reduced blood pressure.

Nitrates are one of the major reasons that green vegetables are recommended for reducing the risk of hypertension and other circulatory disorders. Improved blood flow can even prevent cognitive decline, since blood flow to the brain is not impaired as people get older.

How to take it

The best way to supplement nitrates is by consuming leafy greens and beets. The standard dose for nitrates is between 6.4 – 12 .8 mg per kilogram of bodyweight. This corresponds to:

- 440 - 870 mg for a 150lb person
- 580 - 1,160 mg for a 200lb person
- 730 - 1,450 mg for a 250lb person

About 500 g (just over a pound) of fresh lettuce, rocket, swiss chard, crown daisy, spinach, kale, or beets a day will maximize nitrate's benefits. Cooking does not appear to reduce the bioavailability of nitrates from beets. If you eat a lot of cruciferous vegetables, like spinach and kale, consider adding [iodine](#) to your diet by increasing your consumption of iodized table salt. These vegetables contain goitrogens, which are compounds that can disrupt the thyroid if consumed in high quantities, like the dose described above.

CoQ10

Why it is a proven option

Coenzyme Q10 (CoQ10) is a molecule found in mitochondria. It is very important to the process of energy production. Though the body already produces CoQ10, supplementation can offer benefits to people with cardiac tissue damage.

People who have suffered a heart attack will experience the most benefit from CoQ10 supplementation. Supplementation will reduce the risk of further heart complications.

Statin medications can deplete CoQ10 levels in the body. If you are taking statins, talk to your doctor about supplementing CoQ10.

Further research is needed to determine if CoQ10 supplementation can benefit people with less severe cardiac damage.

How to take it

To supplement CoQ10, take 70 – 90 mg, once a day with a meal containing fatty acids.

Though higher doses, in the 200 – 300 mg range, result in higher levels of CoQ10 in the body, further research is needed to determine if higher levels of CoQ10 will provide more benefits than the standard dose.

L-Carnitine

Why it is a proven option

L-Carnitine is an amino acid that plays a role in preventing cardiovascular disease. People with previous heart complications can supplement L-carnitine to reduce the risk of future complications.

People who have suffered a heart attack can supplement L-carnitine to improve heart health and lower the risk of angina, which is pain in the chest

or limbs caused by a lack of circulation. L-Carnitine will also reduce the risk of ventricular arrhythmia, during which the heart beats abnormally.

How to take it

To supplement L-carnitine, take 5 – 9 g a day, with a meal.

Studies using this dose have used the basic form of L-carnitine, and it is recommended because it is cheaper than L-carnitine L-tartrate (LCLT) and glycine propionyl L-carnitine (GPLC).

Venotropics

Why it is a proven option

Venotropics are supplements that can improve the rate at which blood returns to the heart. Supplementation can reduce the risk of blood pooling in limbs due to poor circulation.

Venotropic supplements are used to treat chronic venous insufficiency (CVI), which is characterized by blood pooling in extremities. Venotropic supplements are also used by people that want to reduce varicose veins or leg swelling caused by prolonged sitting.

Venotropic supplements include [*Aesculus hippocastanum*](#), [*Ruscus aculeatus*](#), [*Pycnogenol*](#), and Daflon, a brand name for a mix of diosmin and [*hesperidin*](#).

These supplements have similar effects. Daflon was the first venotropic supplement on the market, and it is slightly less effective than Pycnogenol.

Pycnogenol is a potent venotropic supplement. Grape seed extract, due to its similarity to Pycnogenol, may also be effective at reducing leg swelling caused by sitting.

How to take it

To supplement *Aesculus hippocastanum*, take 50 – 75 mg twice a day, for a total daily dose of 100 – 150 mg.

To supplement *Ruscus aculeatus*, take 375 - 750 mg twice a day, 12 hours apart, for a total daily dose of 750 – 1,500 mg of the dry root extract. This is equivalent to 75 mg of a 10:1 extract.

To supplement Pycnogenol, take 150 – 300 mg once a day with the first meal of the day.

To supplement the flavanones initially branded as ‘Daflon’, take 500 mg of the combination twice a day, twelve hours apart, for a total daily dose of 1,000 mg. This should be 90% diosmin by weight (900 mg) and 10% hesperidin (100 mg).

Fish Oil

Why it is a proven option

Fish oil is made up of two fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Fish oil is the most reliable supplement for reducing triglyceride levels.

Fish oil is not a base supplement because its effects vary based on who is supplementing it. Fish oil, at the recommended dose, is not harmful. When supplemented by people with normal triglyceride levels, fish oil can reduce high blood pressure and may also alleviate inflammation, which can benefit cardiovascular health by reducing plaque formation and the risk of atherosclerosis, a disorder characterized by narrow arteries.

Lovaza was the first pharmaceutical brand name for fish oil. Today, there are many kinds of pharmaceutical fish oil brands. Vascepa, for example, is made up of pure EPA to avoid the increase in LDL cholesterol caused by DHA.

How to take it

To supplement fish oil, take 4 g of combined EPA and DHA, once a day with a meal. This dose will reduce triglyceride levels, and can be divided into several doses a day.

To supplement fish oil as a general cardiovascular health supplement, take 300 – 600 mg of fish oil a day, with a meal, to reduce the chance of fishy burps. This dose is equivalent to adding fatty fish to the diet several times a week. Consuming fish oil through food will provide the same benefits as supplementation.

Vitamin K

Why it is a proven option

Vitamin K is a fat soluble essential vitamin that can prevent hemorrhaging.

Vitamin K supplementation can also increase osteocalcin levels. Osteocalcin is a protein that can remove calcium that has built up on arteries. By reducing arterial stiffness, osteocalcin can prevent cardiovascular injury.

More research on vitamin K's effects is needed before it can be recommended as a base supplement.

How to take it

The optimal dose for vitamin K is 1,000 mcg. This is much higher than the recommended daily intake (RDI) for vitamin K in many countries.

Vitamin K can be supplemented through vitamin K1 (the plant form) and vitamin K2 (the animal form). Vitamin K2 is actually a series of molecules, designated by labels like MK-4 and MK-7.

Vitamin K1 or vitamin K2 MK-7 supplements are recommended over Vitamin K2 MK-4 supplements. To supplement vitamin K1, take 1,000 mcg. To supplement vitamin K2 MK-7, take 200 mcg. Only take one of these forms of vitamin K, not both.

Blending 500 g of kale (consumed with a source of fat to improve absorption) will provide the same amount of vitamin K as described above. The fermented soybean food product natto is another source of vitamin K, though you would

need to eat 50 g a day to make supplementation unnecessary. Due to natto's texture and scent, it may take some time to acquire a taste for it.

As mentioned earlier, high doses of kale have a high goitrogen content, which can disrupt thyroid functioning over time. Heating the vegetable and adding [iodine](#) (through table salt) can suppress the effects of goitrogens. Consider iodine supplementation if adding salt to the diet is not an option.

Do not supplement vitamin K if you are taking warfarin or blood thinning medication.

Olive Leaf Extract

Why it is an unproven option

Olive leaf extract is supplemented for its oleuropein content, a compound found in olives. Olive leaves have higher concentrations of oleuropein, so they are used to make dietary supplements instead of the olive fruit.

Olive leaf supplementation can significantly reduce the amount of low density lipoprotein (LDL) oxidation that happens after a meal. Prolonged supplementation of olive leaf is thought to reduce plaque buildup in arteries, since LDL oxidation is one of the biggest contributors to plaque formation.

Olive leaf supplements are not a base supplement because the reduction in plaque has not yet been confirmed. Though supplementation can reduce LDL oxidation in the short term, more research is needed to determine if this leads to reduced atherosclerotic risk over a lifespan.

How to take it

To supplement olive leaf, take 500 – 1,000 mg over the course of a day. Some studies have found benefits from doses as low as 10 mg.

Olive leaf should be taken with meals with a high fat content.

Consuming olive oil products can provide the same benefits as low dose olive leaf supplementation.

Terminalia arjuna

Why it is an unproven option

Water extracts from the tree bark of *Terminalia arjuna* have traditionally been used to improve heart health. Preliminary evidence suggests people who have suffered heart attacks may experience various benefits from *Terminalia arjuna* supplementation, although more research is required to confirm how *Terminalia arjuna* exerts its effects and how potent they are.

Animal evidence suggests *Terminalia arjuna* supplementation can prevent abnormal heart rates and protect cardiac tissue from damaging stressors. *Terminalia arjuna* supplementation may benefit healthy people as well by increasing cardiovascular capability during exercise.

Much more human evidence is needed before *Terminalia arjuna* can be recommended specifically for heart health, but current evidence is promising.

How to take it

To supplement *Terminalia arjuna*, take 500 mg of the water extract once a day, 30 minutes before breakfast. People who have suffered a heart attack can take this dose every eight hours.

Do not supplement ethanolic *Terminalia arjuna* extracts.

Stimulants

People supplementing for heart health should be careful when using stimulants like caffeine, fat burners like ephedrine or synephrine, and many pre-workout supplements. Most stimulants are generally safe to use, but people with heart problems are more at risk for potential side effects, which include heart arrhythmia, increases in blood pressure and greater risk for a traumatic cardiovascular injury, like a heart attack.

Do not take stimulants at a higher than recommended dose for a prolonged period of time. Do not increase stimulant doses to counteract the effects of tolerance. This can cause additional side effects and is not safe. Instead, stop using the stimulant and allow sensitivity to return.

Assembling Your Supplement Stack

The following outlines how to incorporate this supplement stack into your daily nutrition habits.

Incorporating Base Supplements

The base supplements in the Cardiovascular & Heart Health stack include **procyanidin** supplements, **garlic**, and **nitrates**. All of these compounds can be ingested through food products, which would render supplementation unnecessary.

To incorporate nitrates throughout the day, eat at least 500 g (about a pound) of Swiss chard, spinach, kale, crown daisy, lettuce, rocket, or beets.

Other leafy greens and tuber vegetables like turnips provide lower levels of nitrates than the foods listed above.

Add three cloves of garlic to your diet per day, spread out over several meals. To supplement garlic, take 600 – 1,200 mg in several doses through the day, with meals.

Procyanidin supplements include **Pycnogenol**, **grape seed extract**, and **cocoa extract**.

To supplement Pycnogenol, take 90 – 200 mg of the maritime pine bark extract once a day.

To supplement grape seed extract, take 150 – 300 mg once a day.

To supplement cocoa extract, take 250 – 500 mg, twice a day, for a total daily dose of 500 – 1,000 mg. This is equivalent to 25 g of dark chocolate.

Incorporating Supplement Options

For athletes who want to increase cardiovascular performance

Take the base **garlic** (600 – 1,200 mg) and a **procyanidin** source. Take garlic with meals and the procyanidin source in the morning. Take dietary nitrates 60 – 90 minutes before exercise. See above for base supplement dosing details.

Add *Terminalia arjuna* (500 mg), taken once a day in the morning.

For people with no heart complications practicing preventative care

Take the base supplements as described above. Add **vitamin K1** (1,000 mcg) or **MK-7** (200 mcg) once a day, taken with a meal containing some dietary fat. **Olive leaf extract** (500 – 1,000 mg) can be taken with fat-containing meals as well to reduce the risk of LDL oxidation which is thought to confer a protective effect.

For people who have suffered a heart attack

After consultation with your medical professional, modify your diet to increase **nitrate**, **garlic**, and **procyanidin** consumption. Add **CoQ10** (90 – 150 mg) and **L-carnitine** (5 - 9 g), taken once a day with food.

For people with varicose veins or leg swelling caused by sitting

Modify your diet to increase **nitrate** and **garlic** consumption.

Supplement a **procyanidin** source for at least two weeks, and if problems persist, add a **venotropic** supplement.

Other Options

See the [Venotropics](#) section for details on supplementing *Aesculus hippocastanum*, *Ruscus aculeatus*, Pycnogenol, and the combination of one part hesperidin to nine parts diosmin that is also used for this purpose.

Fish oil (4 g) can be added to any stack if elevated triglyceride levels are a concern.

How do I add supplements to my stack that are not covered in this guide?

Before adding a new supplement to your stack, supplement your current stack for a few weeks to determine if you need to make a new addition. If you want to make multiple changes to your stack, pick one supplement to add at a time. Identify the stack change that you think will be the most effective, and do your research:

1. Use [Examine.com](https://www.examine.com) to determine if that supplement would have a negative interaction with your current stack. Talk to your doctor about including a new supplement in your stack.
2. Introduce the new supplement at half of the regular dose.
3. After a week with the new supplement, slowly increase the dose to the recommended dose if you are not experiencing the effects you want.

Stacks are intended to be synergistic, which means taking two supplements together may provide more effects than the supplements by themselves. New supplements should be added carefully, since even low doses can be powerful if other supplements in your stack improve their effects.

Can I modify the recommended doses?

If a supplement has an established advised dosage range, stay within that range. If a supplement has a recommended dose, and not a range, stay within 10% of that dose. Halving or doubling an advised dose could be ineffective or even dangerous.

The safest way to add dietary supplements to your life is one at a time. If you are considering purchasing several supplements, purchase only one and add the others after a week or two of supplementation. This will limit the risk of new supplements, and it will also make it easier to figure out what supplements are providing you with your newfound benefits.

Why is grape seed extract similar to pycnogenol, but cocoa isn't?

Though procyanidin supplements are all similar, Pycnogenol and grape seed extract contain procyanidin B2, while cocoa B2 levels are low.

Cocoa also contains (-)-epicatechin, which is a compound that can improve blood flow similar to B2. Cocoa's effect is not a venotropic effect.

These compounds are similar enough to be categorized together, but they should not be supplemented the same way. See the [Procyanidins](#) section for more information on supplementing these compounds.

Eating this much nitrate is hard, any tips?

If consuming enough vegetables is difficult, considering blending or juicing them. Both options are effective, although juicing will remove the fiber from the vegetables which may make something like beetroot much easier to drink.

If I blend 500 g of kale, does that cover both my vitamin K1 and nitrate needs?

Yes, 500 g of kale would cover both your vitamin K1 and nitrate needs. Make sure to blend the kale to get enough vitamin K1, since the plant form of vitamin K is bound to a protein fragment of the kale and requires intense mechanical disturbance to separate it. Separation allows the vitamin K to be absorbed.

Precautions & Troubleshooting

The safest way to add dietary supplements to your life is one at a time. If you are considering purchasing several supplements, purchase only one and add the others after a week or two of supplementation. This will limit the risk of new supplements, and it will also make it easier to figure out what supplements are providing you with your newfound benefits.