SelfDecode™

High Cholesterol

DNA Health Report

REPORT CATEGORY

HEART & BLOOD VESSELS

Sample Client

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Personal information

NAME

Sample Client

SEX AT BIRTH

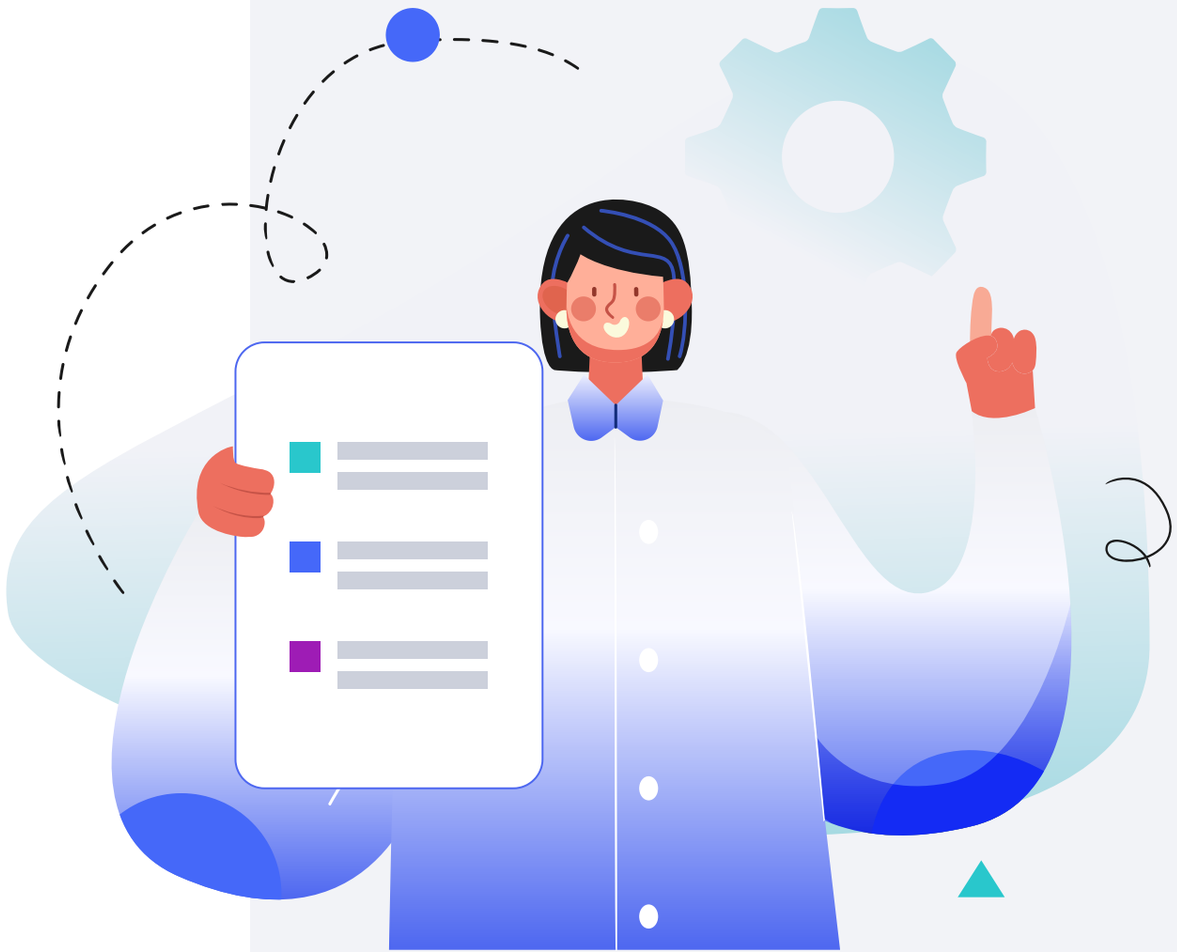
Female

HEIGHT

5ft 9" 175.0cm

WEIGHT

165lb 75.0kg



DISCLAIMER

This report does not diagnose this or any other health conditions. Please talk to a healthcare professional if this condition runs in your family, you think you might have this condition, or you have any concerns about your results.

Introduction

Around 20% of your cholesterol is absorbed in your gut from the food you eat. That's why if you have high cholesterol, one of the first actions your doctor will recommend is to eat less saturated and trans fat [R].

Unfortunately, simply eating less of these foods isn't enough to sufficiently lower cholesterol for some people. Thankfully, there are other cholesterol-lowering strategies available, like eating plant sterols and stanols!

These compounds are found in plants like nuts, rice bran, and avocado. You can think of them as the plant versions of cholesterol (plant-sterol, if you will). Plant-sterol is very similar in structure to cholesterol, but doesn't come with the negative health effects [R, R, R]!

Just like cholesterol, plant-sterol is absorbed in your gut. Because they're so similar in structure, they compete for absorption at the same location. As a result, the more plant-sterol you eat, the more it will compete with cholesterol, causing less cholesterol to be absorbed [R, R, R].

Strangely, researchers investigating the effects of plant-sterol on your "bad" cholesterol (LDL) found that, despite their potential benefits, a small group of people actually experienced no benefit. Even worse, some people experience an increase in "bad" cholesterol after consuming plant-sterols. But why does this happen [R, R, R]?

Well, the answer may lie in your DNA!

Take your *CYP7A1* gene. A variant of the *CYP7A1* gene may alter your cholesterol levels by increasing the rate at which cholesterol is absorbed in your gut. This variant may also increase the effectiveness of plant sterols and stanols at lowering your cholesterol [R].

If your absorption levels are higher, even if you eat less cholesterol than another person, you may end up having higher cholesterol levels. Pretty unfair, right? Which is why it's particularly important to understand how your body works. Then you can take targeted action to lower your cholesterol absorption rate, like eating more plant-sterol [R]!

We're all unique. Your genetics can influence how well your body handles cholesterol. The information hidden in your DNA may help predict the best cholesterol-lowering strategies for you, helping you to live a healthier and happier life.

This report focuses on the genetics of cholesterol. Read more to find out:

- **The role of genetics on your cholesterol levels**
- **Your genetic risk score based on over one million genetic variants**
- **Personalized recommendations based on your genetics**

About Cholesterol

Key Takeaways:

- **65%** of people's differences in cholesterol levels may be due to genetics.
- Other risk factors include a diet high in saturated fat, obesity, lack of exercise, older age, smoking, and diabetes.
- If you have high genetic risk, monitoring your cholesterol levels and taking action on modifiable risk factors can reduce your overall risk. If your genetic risk is low but you are testing high or have several risk factors, you may want to take action now.
- Click the **Recommendations** tab for potential dietary and lifestyle changes and **next steps** for relevant labs.

People think of cholesterol as being bad, but it's actually essential. Cholesterol gives shape to all of your cells. Your body also uses it to make vitamin D and some types of hormones [R].

There are two major types of cholesterol: LDL and HDL. We call HDL "good cholesterol" because it helps your liver get rid of excess cholesterol. On the other hand, LDL cholesterol is "bad" because it can stick to your blood vessels. This can cause heart problems [R, R].

If your doctor has ever told you that you have high cholesterol, they were either referring to [R]:

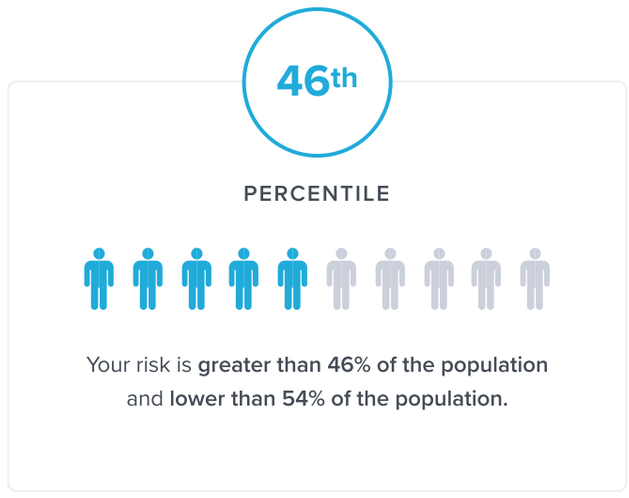
- LDL cholesterol
- Total cholesterol (LDL + HDL)

Some risk factors for high LDL cholesterol include [R, R]:

- A diet high in saturated fat
- Obesity
- Lack of exercise
- Older age
- Smoking

TYPICAL LIKELIHOOD

Typical likelihood of high cholesterol based on 1,171,067 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
APOE	rs7412	CC
PCSK9	rs28362286	CC
PCSK9	rs11591147	GG
PCSK9	rs562556	AA
APOE	rs141622900	GG
APOE	rs7254892	GG
CETP	rs708272	AA
SIDT2	rs651821	TT
APOE	rs12721109	GG
APOE	rs62117160	GG
ABCA1	rs188308962	AA
LDLR	rs72658867	GA
CETP	rs5882	AG
APOE	rs429358	TT
LPL	rs328	CC
PCSK7	rs662799	AA
PCSK7	rs5128	CC
LIPG	rs77960347	AA
/	rs12713559	GG
/	rs151135411	GG

- Diabetes
- Family history (genetics)

If your cholesterol levels rise, your doctor will recommend strategies for lowering them. These may include [R]:

- A diet low in saturated fat
- The Mediterranean diet
- Exercise
- Losing weight

How well you respond to these strategies may depend on your genes.

Up to 65% of differences in cholesterol levels may be attributed to genetics. Genes that may contribute to high cholesterol influence [R, R, R, R, R, R]:

- Cholesterol production (*LPL*, *LIPC*, *HMGCR*)
- Cholesterol transport (*APOB*)
- HDL and LDL cholesterol balance (*CETP*)

GENE	SNP	GENOTYPE
SNX8	rs144787122	AA
MICB	rs361525	GG
IL6	rs1800795	GG
FABP2	rs1799883	CC
LIPG	rs117623631	CC
APOC4	rs140526515	AA
/	rs150401285	AA
NECTIN2	rs138914864	CC
NECTIN2	rs117310449	CC
NECTIN2	rs144261139	CC
NECTIN2	rs76366838	GG
APOE	rs769449	GG
ABCG5	rs141828689	CC
APOE	rs4420638	AA
CLPTM1	rs12691088	GG
NECTIN2	rs138607350	TT
NECTIN2	rs34095326	GG
TOMM40	rs394819	GG
PVR	rs139267469	CC
LIPG	rs80175721	AA
SLC22A3	rs3918291	TT
CLPTM1	rs79429216	GG
MAFB	rs2207132	GG
NECTIN2	rs41289512	CC
LPA	rs3798220	TT
APOC1	rs60049679	GG
BCL3	rs114036675	GG
/	rs145030841	CC
ABCA6	rs77542162	AA
MAFB	rs1883711	GG

The number of "risk" variants in this table doesn't necessarily reflect your overall result.

Your Recommendations

Your recommendations are prioritized according to the likelihood of it having an impact for you based on your genetics, along with the amount of scientific evidence supporting the recommendation.

You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

		DOSAGE
1	Eat Fiber-Rich Foods	
2	Choose Healthy Fats	
3	Whole-Food Plant-Based Diet	
4	Red Yeast Rice	500 mg
5	Limit Saturated Fat	
6	Berberine	500 mg
7	Mediterranean Diet	
8	Dietary Antioxidants	
9	Walking	30 minutes
10	Glucomannan	3 g
11	Black Seed (Black Cumin)	1000 mg
12	Garlic	
13	Artichoke Leaf Extract	500 mg
14	Spirulina	500 mg
15	Alpha-Lipoic Acid	100 mg

1

Eat Fiber-Rich Foods

IMPACT 5 / 5

EVIDENCE 4 / 5

How to implement

Incorporate foods high in fiber, such as fruits, vegetables, whole grains, and legumes, into your daily meals. Aim for a total dietary fiber intake of 25 to 30 grams per day, spread out over all meals.

Description

Fiber is a type of carb that your body can’t digest which supports digestion, heart health, and blood sugar control. You can get fiber by eating things like whole grains, fruits, nuts, seeds, and leafy greens.

Fiber is a type of carb that your body can’t digest. It supports digestion, heart health, blood sugar control, and more [R, R].

Adults should get 28 g of fiber every day. Most people in the US don’t get enough fiber [R, R].

You can get more fiber by eating [R, R]:

- Whole grains
- Fruits
- Leafy greens
- Nuts and seeds
- Beans
- Broccoli

Fiber supplements, such as psyllium husk, are available for people who don’t get enough fiber from their diets [R, R].

How it helps

Health officials recommend eating more fiber (3-10 g) to improve your cholesterol levels. Fiber stops your gut from absorbing too much cholesterol. By doing so, it lowers cholesterol levels in the blood [R, R, R].

High-fiber foods that may lower cholesterol include:

- Buckwheat [R, R, R]
- Oats [R]
- Barley [R, R]
- Beans [R]
- Apples [R]

Diets high in the above foods may be a good choice for reducing cholesterol. They include:

- The Mediterranean diet [R, R]
- Vegetarian diets [R, R]
- The DASH diet [R]

The following fiber supplements may also help improve cholesterol levels:

- Psyllium [R, R, R, R]
- Beta-glucans [R, R, R, R]
- Glucomannan [R, R]

- Inulin [R, R, R, R]
- Pectin [R, R]
- Resistant starch [R]

PERSONALIZED TO YOUR GENES

People with your *LEP* variant may see a bigger drop in cholesterol from fiber (psyllium) supplementation [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
LEP	**rs7799039**	GG	

2

Choose Healthy Fats

IMPACT 5 / 5

EVIDENCE 4 / 5

How to implement

Incorporate sources of unsaturated fats such as olive oil, avocados, nuts, seeds, and fatty fish into your daily diet. Aim for at least two servings of fatty fish per week and use olive oil for cooking and salad dressings. Replace saturated fats found in red meat, butter, and processed foods with these healthier options whenever possible.

Description

Choosing healthy fats, such as those found in avocados, nuts, and fatty fish, can support cardiovascular health, reduce inflammation, and promote overall well-being. A diet balanced in healthy fats can help manage cholesterol levels and reduce the risk of heart disease.

Based on their structure, the fats in our diet can be broadly divided into *saturated* and *unsaturated* fat. Trans fat is a type of unsaturated fat [R, R, R].

In large amounts, trans fat and saturated fat may have a negative impact on your heart and reproductive health. Processed foods and animal products like red meat and dairy are rich in these fats [R, R, R, R, R].

Some types of unsaturated fat can protect your heart and support fertility. **Experts say you should add more unsaturated fats to your diet**. Some good sources include [R, R, R]:

- Nuts
- Seeds
- Fish

Unsaturated fats include polyunsaturated fats or PUFAs (omega-3 and omega-6) and monounsaturated fats or MUFAs [R, R].

How it helps

Many experts recommend eating less saturated fat to help lower cholesterol. This may lower your risk of heart disease [R, R, R, R].

However, keep in mind that simply reducing saturated fats may not reduce your cholesterol. **This is especially true if you replace saturated fats with processed and sugary foods** [R].

To make a meaningful change, replace saturated fats with healthier alternatives, such as unsaturated fats. Good sources of these healthy fats include [R, R, R, R, R]:

- Fish
- Nuts
- Seeds
- Avocado
- Safflower, olive, and canola oil

Fish, walnuts, and seeds are rich in polyunsaturated fats (PUFAs). These fats may be the best replacement for saturated fat [R].

Making these healthy replacements may lower cholesterol by up to 17% [R, R, R, R].

Diets rich in healthy fats include [R, R, R]:

- The Mediterranean diet
- The DASH diet
- Vegetarian diets

PERSONALIZED TO YOUR GENES

People with your *PPARA* gene variant may respond better to diets low in saturated fat [R]. Try to focus on healthy unsaturated fat sources.

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
PPARA	**rs135549**	TT	●●●○○

3

Whole-Food Plant-Based Diet

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

To implement a plant-based diet, fill your meals with fruits, vegetables, legumes, seeds, and whole grains. Aim for at least 5 servings of fruits and vegetables per day, include legumes in your meals several times a week, and choose whole grains over refined grains. Adjust your diet gradually over a few weeks to avoid digestive discomfort.

Description

A plant-based diet primarily consists of foods derived from plants, such as fruits, vegetables, whole grains, nuts, and seeds, while minimizing or excluding animal products. This dietary approach is associated with numerous health benefits, including reduced risk of chronic diseases like heart disease, diabetes, and certain cancers, as well as improved weight management and overall well-being due to its emphasis on nutrient-dense, fiber-rich foods.

A plant-based diet is not necessarily vegetarian or vegan. It focuses on eating foods mainly of plant origin [R].

It includes a variety of fruits and vegetables, grains, dairy, high-protein foods, and oils [R].

Following a plant-based diet may support [R, R, R, R]:

- Heart health
- Blood sugar control
- Kidney health

How it helps

A vegetarian diet, high in fiber and plants, can help lower cholesterol because it tends to be lower in cholesterol and saturated fats, which raise blood cholesterol levels. Additionally, many plant-based foods like veggies, fruits, whole grains, and legumes contain soluble fibers that can actually reduce the absorption of cholesterol into your bloodstream.

Plant-based diets are linked to lower [R, R, R, R, R, R, R, R]:

- Total cholesterol
- LDL cholesterol
- HDL cholesterol
- Non-HDL cholesterol
- Apolipoprotein B levels

Hence, they may reduce heart disease risk. These diets may also benefit people with health conditions such as:

- Diabetes
- Obesity

4

Red Yeast Rice

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Take a 500 mg capsule of red yeast rice supplement once daily, preferably with your evening meal to help with absorption and efficacy.

TYPICAL STARTING DOSE

500 mg

Description

Red yeast rice is a fermented product made from rice and red yeast (Monascus purpureus). It has a long history of use in traditional Chinese medicine, and it is commonly used today as a dietary supplement to help lower cholesterol levels due to the presence of naturally occurring compounds called monacolins.

Red yeast rice is made when a type of fungus grows on rice. As the fungus ferments the rice, it produces a chemical called *monacolin K*. This chemical is very similar to a cholesterol-lowering drug [R].

People mostly use red yeast rice to manage their cholesterol. It may also help with [R, R, R]:

- Inflammation
- High blood pressure
- High blood sugar

How it helps

Red yeast rice contains monacolin K, which works in a similar way as the cholesterol drug lovastatin [R, R, R, R].

Red yeast rice may work well in combination with berberine and policosanol. This combination may lower total and “bad” (LDL) cholesterol and raise “good” (HDL) cholesterol [R, R].

Most experts agree that red yeast rice can affect cholesterol levels. However, not many of these supplements are of good quality. It’s also hard to tell whether they are safe [R, R].

***Please note**: The FDA regulates lovastatin. It does not allow the sale of products containing monacolin K in the United States. Thus, red yeast rice supplements sold in the USA probably don’t contain enough monacolin K to affect cholesterol. Monacolin K itself may cause muscle and liver damage. Talk to your doctor before taking red yeast rice* [R, R].

5

Limit Saturated Fat

IMPACT 4 / 5

EVIDENCE 4 / 5

How to implement

Reduce your intake of saturated fats by choosing lean cuts of meat, opting for low-fat or fat-free dairy products, and using cooking oils high in unsaturated fats (like olive or canola oil) instead of butter or lard. Aim to keep saturated fat to less than 10% of your total daily calories. For someone consuming 2000 calories a day, this means 20 grams or less of saturated fat per day.

Description

Limiting saturated fat intake is crucial for managing cholesterol levels and reducing the risk of heart disease. Choosing lean protein sources and incorporating unsaturated fats into the diet supports cardiovascular health and overall well-being.

How it helps

Many experts recommend eating less saturated fat to help lower cholesterol. This may lower your risk of heart disease [R, R, R, R].

However, keep in mind that simply reducing saturated fats may not reduce your cholesterol. **This is especially true if you replace saturated fats with processed and sugary foods** [R].

To make a meaningful change, replace saturated fats with healthier alternatives, such as unsaturated fats. Good sources of these healthy fats include [R, R, R, R, R, R]:

- Fish
- Nuts
- Seeds
- Avocado
- Safflower, olive, and canola oil

Fish, walnuts, and seeds are rich in polyunsaturated fats (PUFAs). These fats may be the best replacement for saturated fat [R].

Making these healthy replacements may lower cholesterol by up to 17% [R, R, R, R].

6

Berberine

IMPACT 4 / 5

EVIDENCE 3 / 5

How to implement

Take 500 mg of berberine two times a day before meals. Continue this regimen for up to three months, then evaluate its effects with your healthcare provider.

TYPICAL STARTING DOSE

500 mg

Description

Berberine is a compound found in certain plants, known for its potential to support blood sugar control and heart health.

Berberine is an active compound of some plants used in traditional medicine, such as [R]:

- European barberry
- Oregon grape
- Goldenseal
- Chinese goldthread
- Tree turmeric

Berberine is also available as a supplement. People use it to help with [R, R, R]:

- Diabetes
- High cholesterol
- High blood pressure
- PCOS

How it helps

Berberine (0.9-1.5 g/day for 2-6 months) may lower total and “bad” (LDL) cholesterol while raising “good” (HDL) cholesterol [R, R, R, R].

It may also improve cholesterol when it’s combined with other ingredients, such as:

- Milk thistle [R, R]
- Red yeast rice [R, R]
- Policosanol [R, R]
- Coenzyme Q10 [R]

Berberine may help remove cholesterol from the blood and reduce its production [R, R].

PERSONALIZED TO YOUR GENES

A supplement with berberine may reduce cholesterol more in people with your *LDLR* gene variant [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
SPC24	**rs14158**	GG	

7

Mediterranean Diet

IMPACT 3 / 5

EVIDENCE 4 / 5

How to implement

Incorporate a variety of primarily plant-based foods, such as fruits, vegetables, whole grains, nuts, and legumes, into every meal. Choose healthy fats, like olive oil, over saturated fats and consume fish and poultry at least twice a week. Limit red meat to a few times a month and include a moderate amount of dairy products. Opt for water and red wine in moderation as your beverages.

Description

The Mediterranean diet is based on the traditional cuisine from the Mediterranean regions. It moderates the intake of red meat and dairy, while being rich in fruits and vegetables, whole grains, and healthy fats (olive oil).

The Mediterranean diet focuses on traditional cuisine from the Mediterranean regions. It's rich in [R]:

- Olive oil
- Fruits and vegetables
- Whole grains
- Nuts and seeds
- Fish

This type of diet may **reduce inflammation and protect the brain and heart** [R, R, R, R].

Limited intake of animal products, saturated fat, and refined sugar likely contribute to the health benefits of the Mediterranean diet [R].

How it helps

The Mediterranean diet may lower total and "bad" cholesterol (LDL) [R, R, R].

Overweight or obese men may reap the most benefits from this type of diet [R].

Studies suggest that the Mediterranean diet may be better than a low-fat, vegetarian, or Paleo diet at improving cholesterol [R, R, R].

What makes the Mediterranean diet a great choice?

- It's low in saturated fat [R]
- It focuses on healthy fat sources like olive oil and fish [R]
- It's rich in fiber [R]

Health experts agree that the Mediterranean diet may help improve cholesterol. Because of this, it may protect against heart disease [R, R, R].

8

Dietary Antioxidants

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Incorporate foods rich in antioxidants, such as fruits (berries, oranges, plums), vegetables (spinach, kale, bell peppers), nuts (walnuts, almonds), and seeds (flaxseeds, chia seeds) into your daily meals. Aim for at least 5 servings of fruits and vegetables per day, ensuring a variety of colors to cover different antioxidants.

Description

Dietary antioxidants are compounds found in foods that help neutralize harmful molecules called free radicals, potentially reducing the risk of oxidative stress-related diseases and supporting overall health. Examples include vitamins C and E, beta-carotene, and polyphenols.

Our cells sometimes produce molecules called **reactive oxygen species (ROS)** [R].

High levels of ROS can cause oxidative stress and damage our cells. Oxidative stress plays a role in many health conditions, including [R]:

- High blood sugar
- Type 2 diabetes
- Heart disease

Antioxidants are substances that help combat ROS [R].

Antioxidants are found in many plants. Good sources include [R, R, R]:

- Fruits like tomatoes, berries, and pomegranates
- Vegetables like onions, spinach, and celery
- Chocolate
- Olive oil
- Wine

How it helps

Eating a lot of tomatoes (200-400 g/day for 1-3 months) may lower “bad” (LDL) cholesterol and raise “good” (HDL) cholesterol [R, R, R].

Tomatoes contain lycopene and other antioxidants. These compounds prevent some of the toxic effects of LDL cholesterol. **Supplementing with lycopene (25 mg per day for 1-2 months) may lower total and LDL cholesterol** [R, R].

Other antioxidant-rich foods may also improve your cholesterol. These include:

- Oranges [R, R, R, R]
- Grapes [R]
- Indian gooseberry [R, R, R, R]
- Tea [R, R, R, R]

If you don’t eat enough of these foods, some supplements may help. Antioxidant supplements that may lower cholesterol include:

- Alpha-lipoic acid [R, R, R]
- Coenzyme Q10 [R]

PERSONALIZED TO YOUR GENES

People with your *SCARB1* gene variant tend to have lower levels of lycopene. Eating more tomatoes and other sources of antioxidants may help make up the difference [R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
SCARB1	**rs1672879**	GG	

9

Walking

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Incorporate at least 30 minutes of brisk walking into your daily routine, aiming for a minimum of five days a week. This can be done in one continuous session or broken into shorter periods, such as three 10-minute walks throughout the day.

TYPICAL STARTING DOSE

30 minutes

Description

Walking is a low-impact form of exercise that can contribute to cardiovascular fitness, weight management, and improved overall health. It is used to support physical activity goals, enhance mood, and promote better cardiovascular health.

How it helps

Walking helps manage high cholesterol by boosting your body's levels of "good" cholesterol (HDL), reducing the "bad" cholesterol (LDL), and improving overall heart health. It also helps in weight management, which is crucial in controlling cholesterol levels.

A systematic review and meta-analysis of 42 studies (1843 participants) found that walking groups offer various health benefits, such as reduced total cholesterol, increased VO2max, improved physical functioning, and decreased depression scores. Another meta-analysis of 12 studies in overweight or obese women found moderate reductions in total cholesterol and LDL levels with regular moderate-intensity walking. Additionally, a meta-analysis of 25 trials (1176 adults) showed reduced LDL-C and TC/HDL-C with walking, regardless of body composition changes. Another meta-analysis (22 trials, 948 subjects) found a 4% decrease in non-HDL-C in walking groups, with more recent studies showing greater reductions. However, the optimal frequency, duration, and intensity for cardiovascular risk reduction remain unclear, as per a meta-analysis of 37 trials involving 2001 participants [R, R, R, R, R].

10

Glucomannan

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take 1 gram of glucomannan powder with 8 ounces of water, 15 minutes to 1 hour before each meal, three times daily. It's essential to drink plenty of water when taking glucomannan to ensure it reaches the stomach and expands, helping to promote a feeling of fullness.

TYPICAL STARTING DOSE

3 g

Description

Glucomannan is a dietary fiber derived from the root of the konjac plant and is often used as a weight loss supplement. It may promote feelings of fullness and support weight management when used in conjunction with a balanced diet.

How it helps

In one meta-analysis with 12 studies and 370 participants, glucomannan lowered LDL-C by 15.99 mg/dL [R].

In patients with type 2 diabetes, glucomannan reduces total cholesterol, and LDL cholesterol according to a meta-analysis of 6 trials and 440 participants [R].

11

Black Seed (Black Cumin)

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take 1000 mg of black seed (black cumin) supplement daily, preferably split into two doses of 500 mg each, one in the morning and one in the evening.

TYPICAL STARTING DOSE

1000 mg

Description

Black seed, also known as black cumin or Nigella sativa, has been used for its potential health benefits in traditional medicine. It is believed to have anti-inflammatory, antioxidant, and immune-boosting properties.

Black seed (black cumin) and its oil are used in cooking and traditional medicine [R].

People use black seed for [R, R, R, R, R]:

- Asthma
- Allergies
- High blood sugar
- High blood pressure
- Joint pain

How it helps

Black seed supplements may lower total and "bad" (LDL) cholesterol. The antioxidants and healthy fats in black seed may explain these effects [R, R, R].

Studied doses include [R, R, R]:

- **Powder**: 0.5-2 g/day for 1-2 months
- **Oil**: up to 5 g/day for 1-3 months
- **Extract**: 0.7-1 g/day for 2 months

It is sometimes combined with turmeric, garlic, or fenugreek in supplements for high cholesterol [R, R, R].

Black seed may also increase "good" (HDL) cholesterol. However, the evidence for this effect is mixed [R, R, R].

PERSONALIZED TO YOUR GENES

Your *HMGCR* gene variant is linked to higher cholesterol levels. This gene helps make an enzyme that produces cholesterol. Black seed may help by blocking this enzyme [R, R, R, R, R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
HMGCR	**rs3846663**	TC	

12

Garlic

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Incorporate 1-2 cloves of raw garlic into your meals daily. This can be achieved by finely chopping or crushing the garlic and letting it sit for a few minutes before adding it to your dishes to maximize its health benefits.

Description

Garlic is a popular herb known for its potential cardiovascular benefits, including lowering blood pressure and cholesterol levels. It also possesses antimicrobial properties and may support immune function.

Garlic is a vegetable often used to flavor food. It's been a part of traditional medicine for thousands of years [R].

Today, people take garlic to help control their blood pressure and cholesterol [R].

How it helps

Garlic (600-900 mg/day for 3-6 months) may help lower total and "bad" (LDL) cholesterol [R, R, R, R, R].

Garlic may help lower cholesterol by blocking its production [R, R, R].

***Please note**: Garlic can interact with blood thinners (like aspirin, Plavix, Coumadin). If you are on blood thinners, consult your doctor before supplementing with garlic [R].*

PERSONALIZED TO YOUR GENES

Your *HMGCR* gene variant is linked to higher cholesterol levels. This gene helps make an enzyme that produces cholesterol. Garlic may help by blocking this enzyme [R, R, R, R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
HMGCR	**rs3846663**	TC	

13

Artichoke Leaf Extract

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take 500 mg of artichoke leaf extract daily with a glass of water, preferably with or after a meal to aid absorption.

TYPICAL STARTING DOSE

500 mg

Description

Artichoke leaf extract is derived from the leaves of the artichoke plant and is used as a dietary supplement. It is being researched for its potential to support liver health and digestive function.

Artichokes are packed with antioxidants and fiber. People eat the heart of the artichoke. However, many of the plant's active compounds are also found in its leaves [R, R].

People use artichoke leaf extracts to help [R, R, R]:

- Lower cholesterol
- Lower blood pressure
- Improve digestion

How it helps

Artichoke leaf extract (up to 2.7 g/day for 5-12 weeks) may lower total and "bad" (LDL) cholesterol [R].

Compounds from artichoke leaf extract help your body get rid of cholesterol. They may also prevent your body from making too much cholesterol [R, R].

14

Spirulina

IMPACT 3 / 5

EVIDENCE 3 / 5

How to implement

Take 1-8 g of spirulina supplements daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

Spirulina is a blue-green algae. It is rich in nutrients like protein, vitamins, and minerals, particularly vitamin B12 and iron, and is a source of antioxidants, chlorophyll, and phycocyanin. It can be found in powdered or tablet form as a supplement, and is often used to boost energy, support the immune system, and enhance overall nutrition. Additionally, spirulina.

Spirulina is a supplement made from blue-green algae that grows in fresh and marine water [R, R].

Dried spirulina is up to 70% protein. It's also rich in vitamins, antioxidants, and healthy fats. This makes it a great source of nutrition for both people and livestock [R, R, R].

People use spirulina supplements to reduce [R, R]:

- Cholesterol
- Blood pressure
- Blood sugar

How it helps

Spirulina supplements (1-10 g/day for 2-12 months) may reduce "bad" (LDL) cholesterol and raise "good" (HDL) cholesterol [R].

Spirulina may stop your gut from absorbing too much cholesterol from food. It may also prevent some of the toxic effects of LDL cholesterol [R, R, R].

Spirulina may be especially helpful for people with [R, R, R, R]:

- Obesity
- High blood pressure
- High blood sugar

PERSONALIZED TO YOUR GENES

Your *NPC1L1* gene variant is linked to higher levels of "bad" (LDL) cholesterol. This gene affects the amount of cholesterol your body absorbs. Spirulina may help by reducing cholesterol absorption [R, R, R, R].

YOUR GENETIC VARIANTS

GENE	SNP	GENOTYPE	EVIDENCE
NPC1L1	**rs2072183**	GC	

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Alpha-Lipoic Acid

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EVIDENCE 3 / 5

How to implement

Take 600-1800 mg of alpha-lipoic acid daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

100 mg

Description

Alpha-lipoic acid is a natural antioxidant found in almost every cell in your body. People use alpha-lipoic acid to help with issues like skin aging, weight loss, and high blood sugar [R, R, R].

People use alpha-lipoic acid to help with [R, R, R, R]:

- Complications of high blood sugar
- Skin aging
- Weight loss
- Carpal tunnel syndrome

How it helps

Alpha-lipoic acid helps lower cholesterol by preventing the oxidation of LDL (bad cholesterol), thereby reducing its buildup in your arteries. It also improves the function of cells that remove cholesterol from your body, aiding in overall cholesterol management.

Two meta-analyses (the largest one with 12 studies and 770 participants) concluded that supplementation with alpha-lipoic acid (typically 600 mg/day for 8-16 weeks) **lowers total cholesterol (by 10.18-10.68 mg/dL), LDL cholesterol (by 9.22-12.91 mg/dL)**, and triglycerides but not HDL cholesterol [R, R].

Alpha-lipoic acid may have **similar effects in people with metabolic diseases such as type 2 diabetes** according to a meta-analysis of 24 trials [R].