

Biliary Cirrhosis

Disease Report

REPORT CATEGORY —



LIVER HEALTH

Sample Client

Report date: 15 January 2026

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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.

Personal information

NAME

Sample Client

SEX AT BIRTH

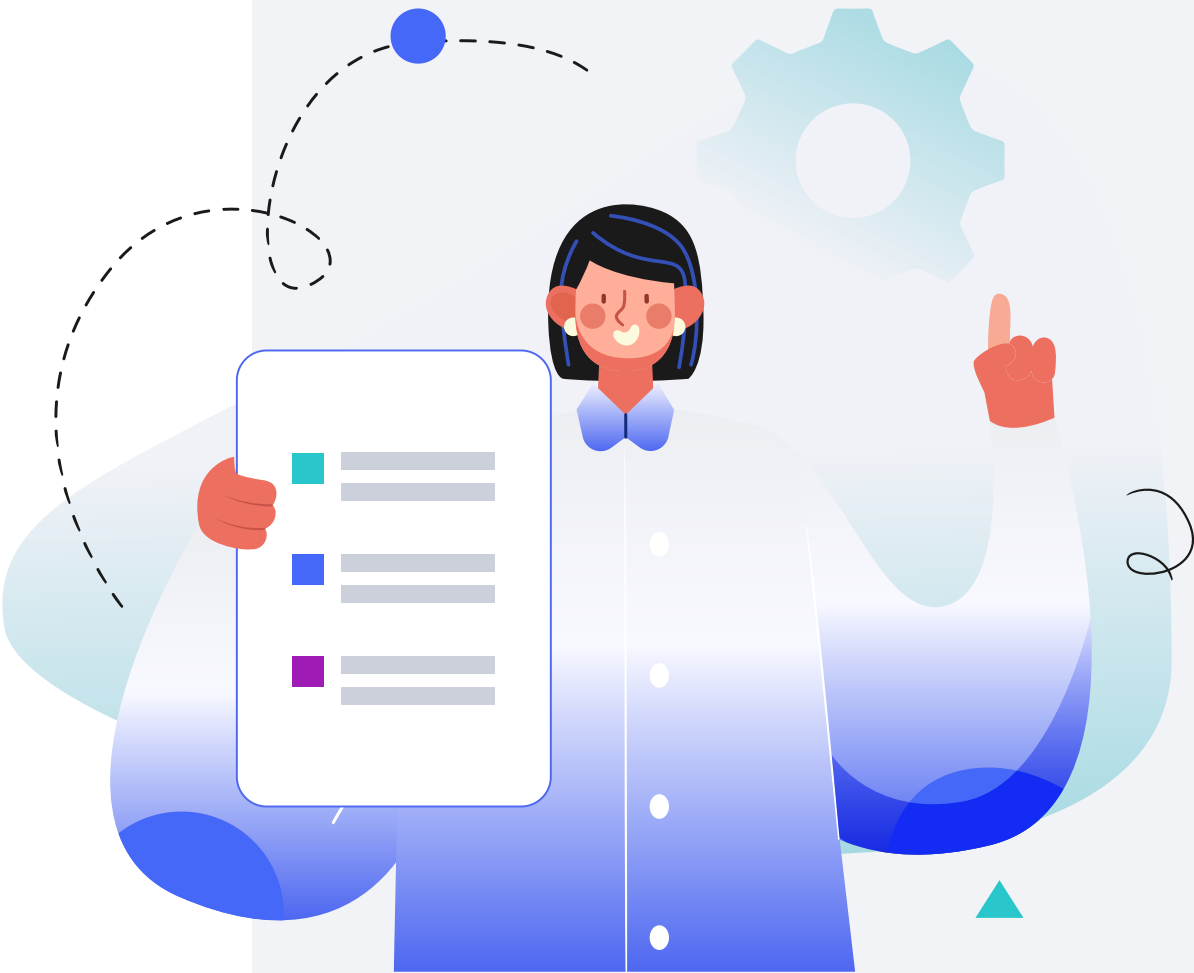
Male

HEIGHT

5ft 5" 165cm

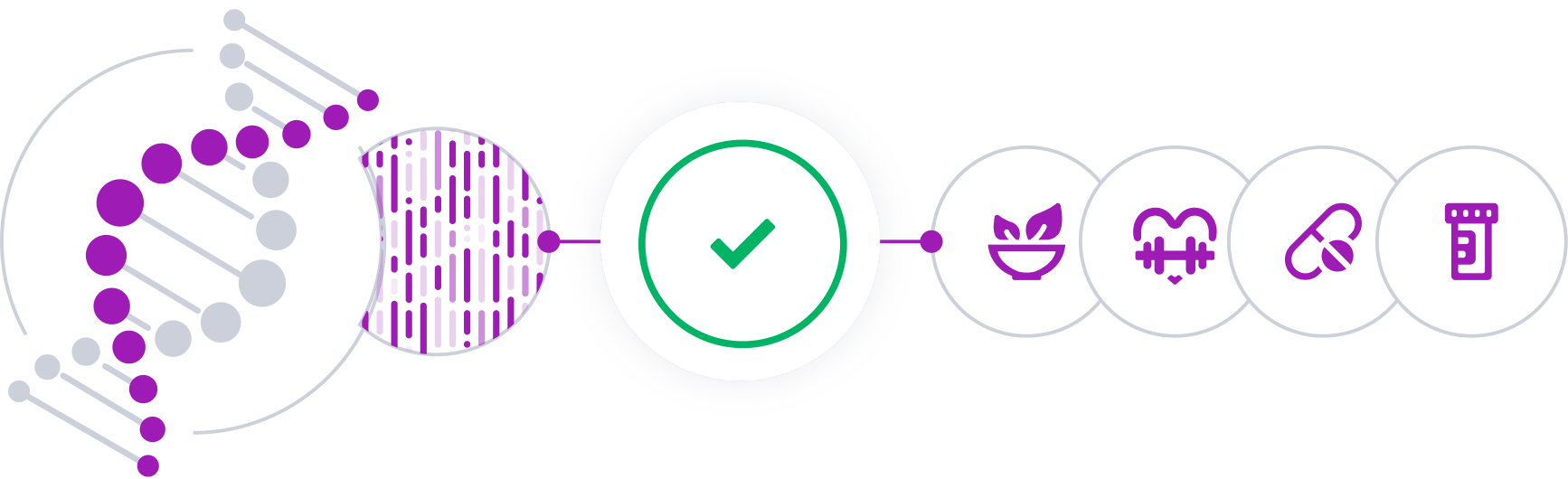
WEIGHT

137lb 62kg



How this works

Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.

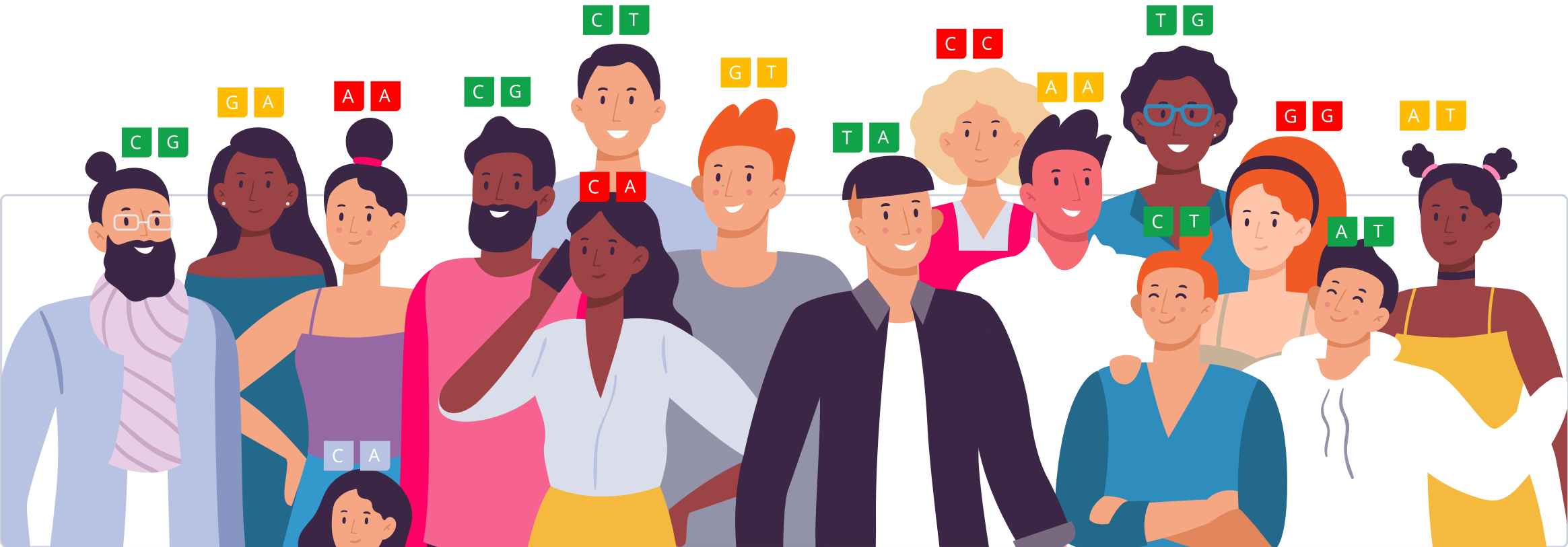


Similarly, our Trait Reports look at how your DNA influences your traits.



Your DNA is like an instruction manual — it contains a lot of information.
You can think of it as a blueprint for your body.

Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



We use artificial intelligence and machine learning to analyze all this information.
We then summarize your results as a risk score or display it on a gauge.

In total, we analyze up to 83 million genetic variants.

When we give a risk score, the risk icon tells you if you are at a higher or lower risk compared to other people:



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

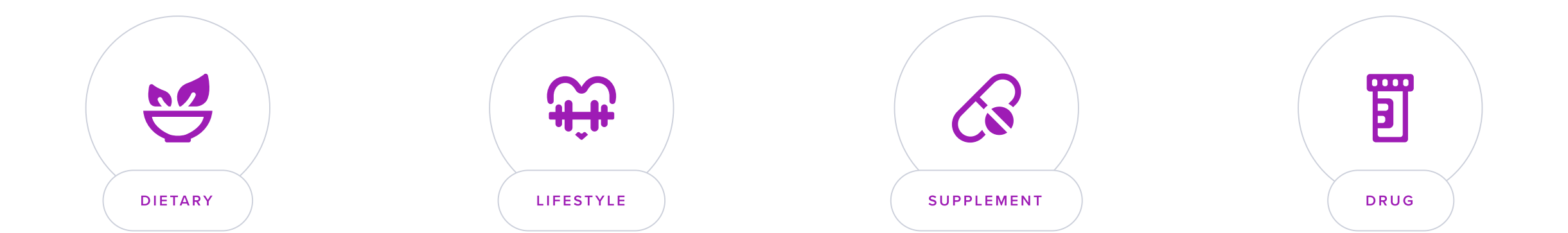
You have 2 risk alleles

Your risk is also displayed as a percentile. This will tell you how your risks compare to our sample population. The lower your percentile number, the lower your risk. The "50th percentile" would be an average risk.

Similarly, the gauge tells you your relative risk score compared to our sample population, or it indicates a specific trait or haplotype you are more likely to have based on your genetic variants.

When applicable, we also list top evidence-based recommendations that may help lower your risk. The focus is on recommendations that may be of benefit to you, based on your genetics.

Our recommendations come in four categories: lifestyle, diet, supplements and drugs.
The following icons tell you which category a recommendation falls into:



Our team of scientists also ranks each recommendation.
We rank based on impact and the strength of evidence in the medical literature.

Impact shows how strongly a recommendation will affect your health in a certain area.
Evidence is how much scientific support there is for the recommendation. Rankings are from 1 to 5 (low to high):



Impact

Impact scores range from 1-5. These scores reflect how much of an effect each recommendation can have. An impact score of 5 predicts the biggest effect.

When a recommendation affects something we can measure, we use those measurements to assign the impact score. For example, a recommendation that decreases cholesterol by 20% will have a higher impact score than one that decreases it by 5%.

Some recommendations affect things that we cannot directly measure, like stress or mood. For these, the impact score is based on how well they work relative to other recommendations and standard treatments. The best ones get the highest scores.

If there is a lot of research that shows a recommendation works especially well for your genotype, the impact score gets increased.

Recommendation Evidence

- 5 / 5
- Recommendations that are considered effective and generally recommended by experts and medical bodies.
-
- 4 / 5
- Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.
-
- 3 / 5
- Recommendations that are considered possibly effective and have many studies supporting them
-
- 2 / 5
- Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.
-
- 1 / 5
- Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.
-
- 0 / 5
- No evidence in humans.

Genotype-specific Evidence

- High-quality
- Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, a few large clinical trials, or a meta-analysis).
-
- Medium-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a few clinical trials or one large clinical trial).
-
- Low-quality
- Direct evidence that a recommendation helps more in people with your gene variant (a single clinical trial or more trials with inconsistent results).
-
- Indirect
- A recommendation may help more in people with your gene variant because it targets a specific gene or protein affected by your variant (e.g., MTHFR, dopamine).
-
- In theory
- A recommendation may help more in people with your gene variant because it targets a specific mechanism affected by your variant (e.g., inflammation, oxidative stress).

Some things to keep in mind:

- Genetics doesn’t play a considerable role in a condition or a trait.
- There is not enough research available to estimate a genetic predisposition.
- There are technical limitations to estimating or presenting a genetic predisposition.
- The topic is sensitive, and a genetic predisposition should only be estimated and presented by a healthcare professional.

Introduction

Biliary cirrhosis, more specifically known as primary biliary cholangitis (PBC), is a chronic disease that causes the small bile ducts in the liver to become inflamed, damaged, and ultimately destroyed. This damage can lead to scarring, known as cirrhosis, as the liver attempts to repair itself. The destruction of bile ducts impairs the liver's ability to eliminate toxins and aid in digestion, leading to the build-up of bile acids in the liver, which further damages liver cells.

In the early stages, many people with PBC do not experience symptoms. As the condition progresses, symptoms might include:

- Fatigue: The most common symptom, often severe.
- Itching: Known as pruritus, this can be severe and occur without a visible rash.
- Dry eyes and mouth: Part of a condition known as Sicca syndrome.
- Yellowing of the skin and eyes (jaundice): Occurs as bile builds up in the liver.
- Right upper abdominal pain: Mild discomfort near the liver.
- Dark urine and pale stools
- Swollen feet and ankles: Due to fluid accumulation

Risk Factors and Management

The exact cause of primary biliary cholangitis is not well understood, but it is considered an autoimmune disease where the body’s immune system mistakenly attacks its own cells and organs. While the specific trigger is unknown, genetic and environmental factors are believed to play a role.

Certain factors are associated with an increased risk of developing PBC:

- Gender: PBC is far more common in women than men.
- Age: It most commonly affects people between the ages of 30 and 60.
- Genetic factors: A family history of PBC increases the risk.
- Smoking and environmental exposures: Some studies suggest a link between smoking and the development of PBC, as well as exposure to certain chemicals.

There is no cure for PBC, but treatment can help manage symptoms and slow the progression of the disease:

- Ursodeoxycholic acid (UDCA): A bile acid that helps move bile through the liver, which can slow disease progression.
- Obeticholic acid (OCA): Approved for use in individuals who do not respond adequately to UDCA.
- Symptom management: Medications to relieve itching, dry eyes, and dry mouth.
- Liver transplant: In cases where the liver fails or the condition leads to liver cancer.

Managing symptoms and supporting liver health through lifestyle choices is important. This includes:

- Nutritional support: A well-balanced diet helps support liver function. Some patients may need to increase their intake of certain vitamins, like fat-soluble vitamins A, D, E, and K, if malabsorption occurs.
- Regular exercise: Helps manage symptoms of fatigue and maintain overall health.
- Avoiding alcohol: Alcohol can exacerbate liver damage and is generally advised against.



TYPICAL LIKELIHOOD

Typical likelihood of biliary cirrhosis based on 30,975 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
STAT4	rs3024921	AA
IL12A	rs9877910	TT
TNFSF11	rs3862738	GG
MYC	rs2608029	CC
DDX6	rs7117261	CT
TIMMDC1	rs1131265	CG
NADSYN1	rs10898201	AC
TNFAIP3	rs6920220	GA
IKZF3	rs907091	CT
DENND1B	rs1539414	GA
HLA-DQB1	rs7775055	TT
IL12RB2	rs72678531	TT
TNPO3	rs10488631	TT
SYNGR1	rs715505	GG
RMI2	rs413024	AA
IL7R	rs700172	TT
ZFP36L1	rs911263	TT

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

The management of primary biliary cholangitis is a long-term process that involves close monitoring and cooperation between healthcare providers and the patient to ensure the best outcomes.

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		DOSAGE			
1	TUDCA (Tauroursodeoxycholic Acid)	250 mg	2	Choline Supplements	425 mg
3	Phosphatidylcholine	420 mg	4	Herbal Bitters	5 ml
5	Chanca Piedra	500 mg	6	Dietary Choline	
7	Milk Thistle (Silymarin)	300 mg	8	Lecithin	7 g
9	Avoid Food Triggers		10	Barberry	500 mg
11	Beef liver		12	Saccharomyces Boulardii	10 billion CFU
13	Ox Bile (Cholic Acid)	500 mg	14	Chicken Liver	

1

TUDCA (Tauroursodeoxycholic Acid)

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Take 250 to 1500 mg of TUDCA (tauroursodeoxycholic acid) per day, divided into two or three doses with meals. This recommendation is based on general guidelines from clinical studies; for specific conditions or as directed by a healthcare professional, dosages may vary.

TYPICAL STARTING DOSE
250 mg

Description

TUDCA is a bile acid derivative naturally produced in small quantities in the human body and also found in the bile of bears. It is often used as a supplement due to its potential to support liver health, reduce inflammation, and protect against bile acid buildup, making it valuable in managing liver conditions like cholestasis and certain liver diseases.

TUDCA, short for tauroursodeoxycholic acid, is a [bile acid](#) that naturally occurs in the body. It consists of ursodeoxycholic acid (UDCA) and taurine [\[R\]](#).

TUDCA is known for its liver-protective effects. People often use it as a dietary supplement to support liver health and promote overall well-being [\[R\]](#).

How it helps

In a [dose-response trial of 24 patients with primary biliary cirrhosis](#), supplementation with TUDCA (500-1500 mg/day) for 6 months **increased biliary ursodeoxycholic acid, decreased serum liver enzymes, and lowered total and LDL cholesterol** [\[R\]](#).

In a 24-week [placebo-controlled trial of 199 patients](#), TUDCA (250 mg, 3x/day) was **as effective as UDCA at reducing serum ALP and more effective at reducing itch**. Similarly, supplementation with TUDCA (500 mg/day) for 6 months was **as effective as the same dose of UDCA at improving serum liver enzymes and equally well tolerated** in a [non-placebo-controlled trial of 23 patients](#). TUDCA (16.6 mg/kg/day for 4-6 weeks) was **as effective as UDCA at lowering cholesterol saturation and enriching bile with ursodeoxycholate** in another [non-placebo-controlled trial of 33 primary biliary cirrhosis patients](#). TUDCA (750 mg/day for 2 months) was **better adsorbed and more effective than UDCA at enriching the bile in ursodeoxycholate** in a [non-placebo-controlled trial of 12 female patients](#). In contrast, another trial ([non-placebo-controlled, 25 patients](#)) found **both treatments satisfactory but concluded UDCA was more effective at lowering GGT and better tolerated** [\[R, R, R, R, R\]](#).

PERSONALIZED TO YOUR GENES

People with your [SLCO1B](#) gene variant may absorb TUDCA better [\[R\]](#).

YOUR GENETIC VARIANTS			
GENE	SNP	GENOTYPE	EVIDENCE
SLCO1B1	rs4149056	TC	

2



Choline Supplements

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take choline supplements at a dosage of 425 mg to 550 mg daily, depending on age and gender, with a glass of water. It is best to consume choline supplements with a meal for optimal absorption. Continue this regimen daily as part of your dietary supplement routine.

TYPICAL STARTING DOSE

425 mg

Description

Choline is an essential nutrient that plays a crucial role in various bodily functions, including brain health, liver function, and metabolism. Incorporating choline-rich foods into your diet supports cognitive function and overall nutritional well-being.

[Choline](#) is a nutrient required for optimal health. Although the body makes some, we need to get choline from our diets to avoid deficiency [\[R\]](#).

It plays key roles in supporting [\[R\]](#), [\[R\]](#):

- DNA production
- Cell structure and function
- Brain, nerve, and heart health

Eggs and beef liver are the best sources of choline. If you can’t meet your daily requirements with food, consider taking a choline supplement such as [\[R\]](#):

- [Phosphatidylcholine](#) (PC)
- [Citicoline](#) (CDP-choline)
- [Alpha-GPC](#)
- [Lecithin](#)

They all supply choline, but each one has unique health perks you may prefer. Check out our posts on different choline-containing supplements to find out which one suits you best.

How it helps

Choline supplements may enhance liver function and fat metabolism, which is critical in biliary cirrhosis as impaired bile flow can lead to fat accumulation in the liver. This nutrient aids in maintaining optimal liver health, thereby potentially mitigating disease progression.

3



Phosphatidylcholine

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 420-900 mg of phosphatidylcholine supplement daily, ideally with meals to enhance absorption. Continue this regimen for at least 3 months to evaluate its effects on your health.

TYPICAL STARTING DOSE
420 mg

Description

Phosphatidylcholine is a crucial phospholipid found in cell membranes throughout the body, particularly in the brain. It plays a vital role in cognitive function and liver health, supporting processes like cell signaling and fat metabolism.Phosphatidylcholine can be derived from soybeans and other sources, and it is often used as a dietary supplement to promote brain health and liver function.

[Phosphatidylcholine](#) is a key component of cells [\[R\]](#).

It helps [\[R, R, R, R, R, R, R\]](#):

- Maintain cell structure
- Protect the lungs, gut, liver, and nerves
- Break down fats

Because [choline](#) is needed to make phosphatidylcholine, low choline levels can limit its production [\[R\]](#).

How it helps

Phosphatidylcholine aids in maintaining liver integrity and supports the regeneration of liver cells in biliary cirrhosis, which is essential for improving liver function and reducing fat accumulation in the liver.

4



Herbal Bitters

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1 to 2 teaspoons (5-10 ml) of herbal bitters mixed with water or tea, approximately 15-30 minutes before each meal. This practice can be continued on a daily basis for digestive support.

TYPICAL STARTING DOSE

5 ml

Description

Herbal bitters are botanical preparations traditionally used to stimulate digestion and promote gut health. They can aid in digestion, relieve bloating, and support overall digestive well-being.

[Herbal bitters](#) are bitter-tasting herbs. They are used in cultures around the world to support gut health [\[R\]](#).

One common herbal bitter is [artichoke](#). 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 extract to help [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Lower cholesterol
- Lower blood pressure
- Improve digestion

How it helps

Herbal bitters can enhance bile production and improve digestive function, which is crucial for individuals with biliary cirrhosis. By promoting better nutrient absorption and reducing bloating, they help alleviate some digestive stress associated with liver dysfunction.

5



Chanca Piedra

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500 mg of Chanca Piedra supplement orally with water, once daily for a period of 1-3 months. Always check the product label for specific instructions regarding dosage and duration, as formulations may vary.

TYPICAL STARTING DOSE
500 mg

Description

Chanca piedra is a plant used in traditional herbal medicine and dietary supplements for its potential to support kidney and liver health. Some studies suggest it may have properties that can promote urinary tract health and help prevent kidney stones.

[Chanca piedra](#) (*Phyllanthus niruri*) is an herb that grows in tropical areas. The plant is used to make teas, liquid extracts, capsules, or tablets. It has a history of traditional use in China and Malaysia [\[R\]](#).

Some people take chanca piedra to help support the digestive system, liver, and kidneys [\[R\]](#).

How it helps

Chanca piedra may help alleviate symptoms of biliary cirrhosis by promoting liver function and supporting bile production, potentially aiding in the management of liver-related complications. Its antioxidant properties may also help reduce oxidative stress in liver cells.

6



Dietary Choline

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Increase your intake of choline-rich foods such as eggs, beef liver, chicken liver, fish, peanuts, and dairy products. Aim for an adult intake of about 425 mg to 550 mg of choline per day through these food sources, as part of your regular diet.

Description

Choline is an essential nutrient that supports brain function, nerve signaling, and liver health. It is involved in neurotransmitter synthesis and cell membrane structure.

How it helps

In biliary cirrhosis, dietary choline aids in maintaining liver function by supporting fat metabolism and preventing the accumulation of triglycerides, thereby promoting overall liver health and function in affected individuals.

7



Milk Thistle (Silymarin)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a 300 mg milk thistle (silymarin) supplement daily with water, preferably with a meal for better absorption. Continue this regimen as advised by your healthcare provider.

TYPICAL STARTING DOSE

300 mg

Description

Silymarin is a natural plant extract derived from the milk thistle plant (*Silybum marianum*). It has been traditionally used for its potential anti-inflammatory and liver-protective properties. Silymarin consists of several flavonolignans, including silybin, silydianin, and silychristin.

Milk thistle (*Silybum marianum*) is a purple flowering plant in the daisy family. Traditionally, it has been used for liver problems. Some people also eat the leaves in salads [\[R\]](#), [\[R\]](#).

The extract of milk thistle is called *silymarin* [\[R\]](#), [\[R\]](#), [\[R\]](#).

People use milk thistle to help with [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Liver problems
- Blood sugar control
- Indigestion
- Skin problems

How it helps

Silymarin, an antioxidant, was tested alongside UDCA in PBC patients with inadequate response. After one year, no significant improvements were observed, suggesting limited silymarin efficacy for such cases [\[R\]](#).

8



Lecithin

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 1-2 tablespoons (7-14 grams) of lecithin granules or powder daily, or as directed on the supplement label. You can mix it with food or juice to improve palatability. For lecithin capsules or softgels, follow the dosage recommendation on the product label, typically 1-2 capsules daily with meals.

TYPICAL STARTING DOSE

7 g

Description

Lecithin is a natural emulsifier often used as a dietary supplement. It may support liver health and cognitive function due to its choline content, which is a precursor to neurotransmitters and involved in fat metabolism.

How it helps

Lecithin aids in the emulsification and metabolism of fats, which is crucial for patients with biliary cirrhosis as impaired bile secretion can lead to fat malabsorption. Additionally, its choline content supports liver function and helps mitigate cognitive decline associated with liver disease.

9



Avoid Food Triggers

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Identify foods that trigger negative reactions in your body, such as digestive issues, allergies, or headaches, and eliminate them from your diet entirely. This may require keeping a food diary for a few weeks to observe patterns and might involve cutting out common triggers like dairy, gluten, soy, or certain additives. Continuously monitor and adjust your diet to avoid these triggers as long as the symptoms persist.

Description

Food triggers are specific substances or ingredients in one's diet that can exacerbate or induce adverse reactions, such as allergies, sensitivities, or digestive issues, often leading to symptoms like inflammation, bloating, or discomfort.

A "trigger" is something that prompts or worsens the symptoms of a health condition.

Food triggers can lead to a wide range of symptoms in people who are sensitive to them. These may include [R](#), [R](#), [R](#), [R](#):

- Gut problems
- Skin problems
- Migraines

How it helps

Avoiding food triggers in biliary cirrhosis can minimize gastrointestinal distress, reducing inflammation and improving nutrient absorption. This dietary modification helps manage symptoms and enhances overall gut health, essential for patients with compromised liver function.

10



Barberry

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a barberry supplement of 500-1000 mg daily, divided into two or three doses with meals for up to 12 weeks. Do not exceed the recommended dose without consulting a healthcare provider.

TYPICAL STARTING DOSE
500 mg

Description

Barberry is an herbal remedy used in traditional medicine for its potential to support digestive health and reduce inflammation. It contains compounds that may have antimicrobial and antioxidant properties.

How it helps

Barberry supplementation may assist in managing biliary cirrhosis by promoting gut health through its antimicrobial properties, which can help reduce the risk of infections and inflammation, thereby alleviating stress on the biliary system.

11



Beef liver

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate beef liver into your diet 1-2 times per week, aiming for a serving size of about 3-4 ounces (85-113 grams) each time. This can be pan-fried, baked, or incorporated into dishes like stews or pate to make it more palatable.

Description

Beef liver is a commonly recommended organ meat due to its rich content of protein, B-vitamins, and minerals.

Chickpeas are a good source of vitamin B6, iron, folate, fiber, and rich in minerals like copper, zinc, and phosphorus. A ½ cup serving provides 1.1 mg of vitamin B6 or 65%DV.

How it helps

Beef liver is rich in essential nutrients, particularly vitamin B12, which supports energy metabolism and the production of red blood cells. Its high concentration of antioxidants and minerals can help address deficiencies in patients with biliary cirrhosis, promoting liver health and overall wellbeing.

12



Saccharomyces Boulardii

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take Saccharomyces boulardii as an oral supplement, typically available in capsule or powder form, twice daily with a glass of water. Continue this regimen for 4-8 weeks, or as directed by a healthcare provider.

TYPICAL STARTING DOSE
10 billion CFU

Description

Saccharomyces boulardii is a beneficial yeast often used as a probiotic supplement to support digestive health and prevent or alleviate symptoms of diarrhea, including those caused by antibiotics or infections.

How it helps

Saccharomyces boulardii may enhance gut microbiota balance and promote intestinal barrier function, which is particularly beneficial for individuals with biliary cirrhosis as it helps alleviate digestive disturbances and improve nutrient absorption.

13



Ox Bile (Cholic Acid)

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take one 500 mg capsule of ox bile with each meal, not exceeding three capsules daily. This supplement should be used under the guidance of a healthcare professional, especially if you are dealing with a specific medical condition affecting your bile production or digestion.

TYPICAL STARTING DOSE
500 mg

Description

Ox bile is a substance derived from the gallbladders of cattle and is used as a dietary supplement to aid in the digestion of fats. Tradition Chinese medicine has been using ox bile for over 2,000 years. It may be beneficial for individuals with conditions that affect fat absorption.

How it helps

Ox bile (cholic acid) enhances fat digestion by supplying bile salts, which are critical for emulsifying fats. In biliary cirrhosis, where bile production is impaired, this supplementation helps improve nutrient absorption and alleviate symptoms related to fat malabsorption.

14



Chicken Liver

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Incorporate chicken liver into your meals 1-2 times per week, aiming for portions of about 100 grams (3.5 ounces) per serving. You can cook it by pan-frying, baking, or incorporating it into dishes like pâtés or spreads.

Description

Chicken liver is a nutrient-dense food that is rich in iron, vitamin A, and other essential nutrients. It can be a valuable addition to the diet to support healthy blood and overall nutritional health.

How it helps

In biliary cirrhosis, the nutrients in chicken liver, particularly vitamin A and iron, can enhance metabolic functions and support liver regeneration, potentially improving overall liver health and nutrient absorption.

Next Steps

Remember, your genes only tell one important part of your health story!

Now that you've seen your DNA-based results for this health topic, let's take a look at other contributing factors.

Your lab results

Your lab results are impacted by the combined effect of your genes, environment and lifestyle.

Lab tests will give you the best picture of your current health status, while your genes provide insight into your health predispositions and which recommendations are best for you.

	ALT	26 IU/L		9 Nov 2025
	AST	17 IU/L		9 Nov 2025
	GGT	9 IU/L		9 Nov 2025
	Platelet Count	215 x10 ³ /mm ³		9 Nov 2025
	Vitamin D, 25-Hydroxy, Total	58.59 ng/mL		9 Nov 2025
	Albumin	4.3 g/dL		9 Nov 2025
	Bilirubin, Total	1 mg/dL		9 Nov 2025