

ALT

Biohacker Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

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Personal information

NAME

Sample Client

SEX AT BIRTH

Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

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.



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.



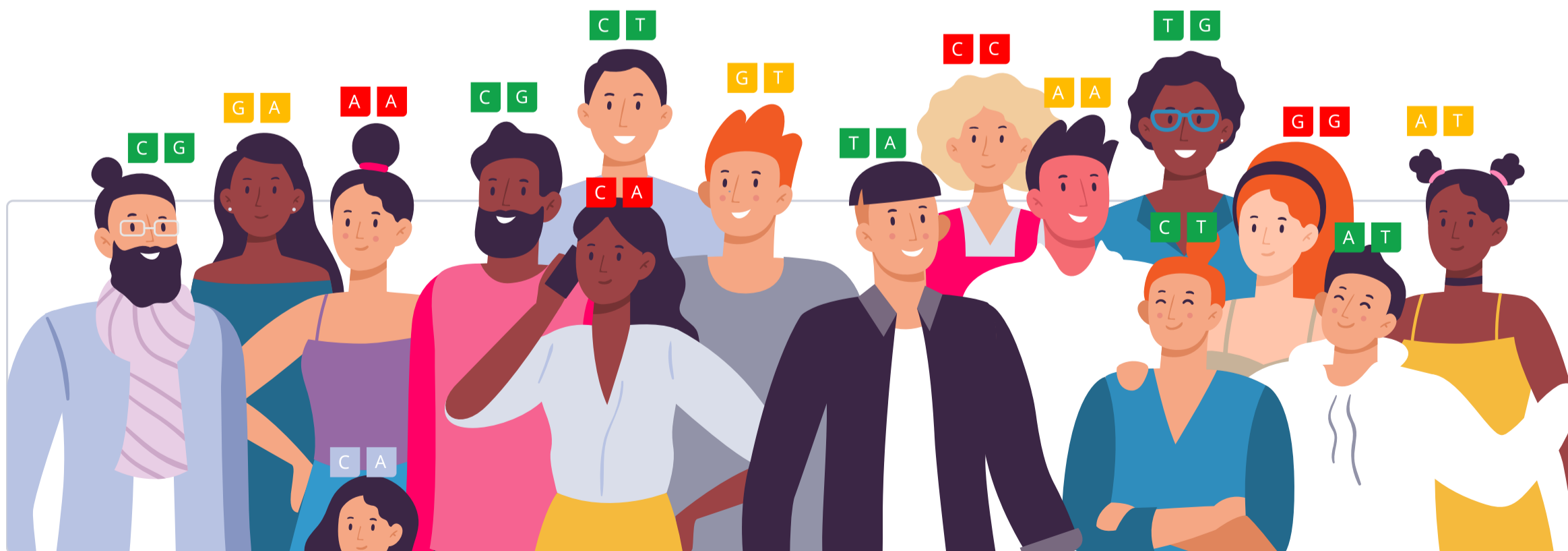
Similarly, our Trait Reports look at how your DNA influences your traits.



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
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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

[ALT](#) (alanine aminotransferase) is an enzyme that breaks down proteins for energy. It is mainly found in the liver, but also in smaller amounts in the kidneys, heart, muscles, fat tissue, intestines, and pancreas [\[R\]](#).

ALT is primarily used to measure **liver health** [\[R\]](#).

Factors Influencing ALT Levels

Normally, blood ALT levels are low. However, when the liver is injured, ALT leaks into the bloodstream. That's why an ALT test is done to monitor liver health and find out if the liver is damaged or diseased [R].

Common causes of liver damage that may raise ALT include [R]:

- Obesity
- Alcohol use
- Hepatitis
- Certain drugs

Genetics only plays a minor role in ALT levels. Interestingly, genetic predisposition to higher ALT levels may offer protection against prostate cancer [R, R].

Genetic predisposition to higher fasting insulin may be associated with increased ALT [R].

Genetically higher ALT levels may be causally associated with:

- High blood sugar (type 2 diabetes) [R, R, R, R]
- High blood pressure (systolic) [R]
- Gout [R]
- Overweight (lower risk) [R]
- Joint pain [R]



HIGHER LEVELS

Predisposed to higher ALT levels based on 8,175 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
GPT	rs141505249	GG
SOS2	rs72681869	GG
TNFSF10	rs79287178	GG
SAMM50	rs3747207	AA
MAU2	rs140868651	AA
PANX1	rs7117339	CC
CCND2	rs76895963	TT
CYP2A6	rs140980078	CC
EBPL	rs2812208	GG
AKNA	rs7041363	CC
APOH	rs1801689	CA
IL6	rs151011383	GG
HSD17B13	rs13141441	GG
APOE	rs429358	TT
PEX11A	rs141117801	CC
ABCB4	rs4148826	TT
ERLIN1	rs2862954	TC
MTARC1	rs2642438	GG
APOL3	rs132631	CA
CPLANE2	rs1497406	GA
SERPINA1	rs28929474	CC
ZDHHC18	rs114165349	GG
A1CF	rs151068477	GG
PHF23	rs117643180	CC

GENE	SNP	GENOTYPE
MAFB	rs1883711	GG
ALDOB	rs3739721	CC
DHRS9	rs10200158	AA
ZNF827	rs4835265	CC
TRIM5	rs11601507	CC
/	rs61801010	AA
ABCG5	rs115445558	GG
FAAP20	rs28384811	CC
FEZ1	rs76118307	AA
SLCO1B3	rs73073222	GG
HKDC1	rs2394529	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.

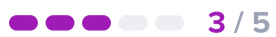
You'll likely find common healthy recommendations at the top of the list because they are often the most impactful and most researched.

	DOSAGE		DOSAGE		
1	Aerobic Exercise (Cardio)	1 hour	2	Keto Diet	
3	Probiotic Yogurt		4	Curcumin	500 mg
5	SAM-e	400 mg	6	Turmeric	
7	L-Carnitine	500 mg	8	Artichoke	
9	Avoid PCBs		10	Avoid Organochlorine Pesticide Exposure	
11	Tyrosol	10 mg	12	Cinnamon	500 mg
13	Avoid Cadmium Exposure		14	Honey	
15	Taurine	500 mg	16	Almonds	
17	Chlorella	3 g	18	Royal Jelly	300 mg
19	Clostridium Butyricum	300 mg	20	Celery Seed	600 mg
21	Mastic Gum	350 mg	22	Pentadecanoic Acid (C15:0)	
23	Picrorhiza Kurroa		24	Milk Thistle (Silymarin)	300 mg
25	Lactobacillus Delbrueckii and S. Thermophilus	10 billion CFU	26	Cordyceps	500 mg
27	L-Citrulline	3 g	28	Avoid Lead Exposure	
29	Aloe Vera	50 mg	30	Bacillus Coagulans	

31	Lactobacillus Paracasei	10 billion CFU	32	Chum Salmon Milt	
33	Black Seed (Black Cumin)	1000 mg	34	Cupping Therapy	15 minutes
35	Purple Sweet Potato		36	Avoid Mercury Exposure	
37	Avoid PAHs Exposure		38	Propolis	
39	Mitoquinone Mesylate (MitoQ)		40	Jiaogulan (Gynostemma Pentaphyllum)	1350 mg
41	Prunes		42	Fucoidan	300 mg
43	Alpha-Lipoic Acid	600 mg	44	Dietary Antioxidants	
45	Methylsulfonylmethane (MSM)	1 g	46	Lactobacillus Bulgaricus	10 billion CFU
47	Streptococcus Thermophilus	10 billion CFU			

1  **Aerobic Exercise (Cardio)**

IMPACT  4 / 5

EVIDENCE  3 / 5

How to implement

Engage in at least 150 minutes of moderate-intensity aerobic exercise or 75 minutes of vigorous-intensity activity each week. Distribute this time over at least 3 days per week, avoiding consecutive days of vigorous exercise to allow for recovery.

TYPICAL STARTING DOSE

1 hour

Description

Engaging in regular aerobic exercise, such as running, swimming, or cycling, offers numerous health benefits, including improved cardiovascular fitness, weight management, and mood enhancement. It supports overall physical and mental well-being while reducing the risk of chronic diseases.

Cardio, short for cardiovascular exercise, is any type of physical activity that temporarily increases your heart rate. Examples include **running, cycling, swimming, and brisk walking**.

Regular cardio exercise has many benefits for your overall health. It can help lower your risk of heart disease and diabetes, support weight loss, and improve your mood and energy levels. To get the most out of cardio, try to do it for at **least 30 minutes, 3-5 times a week**.

Interval training is a type of cardio that combines periods of high-intensity training with brief rest periods.

How it helps

Experts agree that **20-30 minutes of physical activity per day may help with fatty liver** [\[R, R, R\]](#).

Exercise interventions, especially if lasting longer than 20 weeks, may reduce ALT levels in people with this condition. Exercise may help with or without weight loss. When compared to other exercise modalities, aerobic exercise may be more effective than strength training but slightly less effective than HIIT at lowering ALT [\[R, R, R, R, R, R, R\]](#).

2



Keto Diet

IMPACT

3 / 5

EVIDENCE

3 / 5

How to implement

Adopt a diet that consists of about 70-80% fat, 10-20% protein, and 5-10% carbohydrates. Eliminate or significantly reduce the intake of sugar and starches like bread, pasta, rice, and potatoes, focusing instead on high-fat foods like meats, fatty fish, eggs, butter, and healthy oils, as well as low-carb vegetables like leafy greens. This dietary pattern should be maintained consistently for a period of at least 3-4 weeks to achieve ketosis, after which it can be adjusted based on individual goals and responses.

Description

The keto diet is a high-fat, low-carbohydrate eating plan designed to induce a state of ketosis in the body, where it primarily burns fat for energy. It is often used for weight loss and managing certain medical conditions.

The ketogenic diet, or the 'keto' diet, is rich in fat and restricts carb intake [\[R, R\]](#).

On the ketogenic diet, 50 g of carbs or less are consumed per day. Around 55-80% of the calories come from fat [\[R\]](#).

The ketogenic diet depletes the body of sugars like glucose. When people fast or eat very little carbs, the body makes less insulin. In response, the body starts using fat for energy.

When the body only uses fat for energy, molecules called ketones are formed. This state is called *ketosis*.


The ketogenic diet may help with:


- Seizures [\[R\]](#)
- Excess weight [\[R\]](#)
- Diabetes [\[R, R\]](#)


How it helps

A Keto diet restricts carbohydrate intake, forcing your body to burn fats for energy which can reduce liver fat content, thus improving ALT (Alanine Aminotransferase) levels, an enzyme tied to liver health. Also, it helps in weight management which indirectly improves your liver's condition.

A meta-analysis of 12 studies found that very low-carbohydrate ketogenic diets reduce AST (by 7 U/L) and ALT (by 8 U/L) [\[R\]](#).

3  **Probiotic Yogurt**

IMPACT  3 / 5

EVIDENCE  1 / 5

How to implement

Consume one to two servings of probiotic yogurt each day. Each serving is typically 6 to 8 ounces. Continue this practice daily for at least 1 to 2 weeks to begin noticing benefits to digestive health.


Description

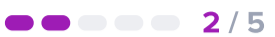
Probiotic yogurt is a dairy product containing live probiotic cultures like Lactobacillus and Bifidobacterium, which can aid digestion and improve gut health when consumed regularly. It is a good source of calcium, protein, and probiotics, contributing to bone health and digestive well-being.

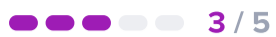
How it helps

Probiotic yogurt is rich in healthy bacteria which aid in digestion and improve liver health. It may not directly treat ALT (Alanine Aminotransferase, a liver enzyme) elevation but it helps maintain overall gut health thus indirectly supporting liver function.

Subjects in the intervention group (n=36) consumed 300 g/d of probiotic yogurt containing Lactobacillus acidophilus La5 and Bifidobacterium lactis Bb12 and those in the control group (n=36) consumed 300 g/d of conventional yogurt for 8 wk. Probiotic yogurt consumption resulted in reductions in serum levels of alanine aminotransferase, aspartate aminotransferase, total cholesterol, and low-density lipoprotein cholesterol, compared with control group [\[R\]](#).

4  **Curcumin**

IMPACT  2 / 5

EVIDENCE  3 / 5

How to implement

Take a 500 mg curcumin supplement daily with food. To enhance absorption, take it with a meal that contains fats or oils since curcumin is fat-soluble.

TYPICAL STARTING DOSE

500 mg

Description

Curcumin is a compound found in turmeric known for its anti-inflammatory and antioxidant properties. It has been studied for its potential to reduce inflammation, support joint health, and contribute to overall well-being.

[Turmeric](#) is a yellow spice from India. It may reduce inflammation and [oxidative stress](#) [R].

The most important active compound in turmeric is **curcumin**. People use curcumin for [R, R, R, R, R, R]:

- Joint pain
- Hay fever
- Mood
- High blood sugar
- Gut health
- Liver health

How it helps

Curcumin, a compound found in turmeric, has been shown to reduce the levels of Alanine aminotransferase (ALT), a key enzyme that indicates liver health. It helps in treating ALT by reducing inflammation and oxidative stress in the liver, thus improving its function.

In a meta-analysis of 31 RCTs, turmeric/curcumin supplementation significantly reduced ALT and AST levels (-4.09 U/L and -3.81 U/L, respectively) but not GGT levels. Clinical effectiveness is not guaranteed despite statistical significance [R].

In NAFLD patients, a meta-analysis of six RCTs showed that turmeric/curcumin supplementation reduced ALT and AST levels (-7.31 U/L and -4.68 U/L, respectively) significantly. This reduction was observed in studies lasting less than 12 weeks [R].

Curcumin supplementation (80-1,000 mg/day for 4-12 weeks) may reduce ALT levels. Curcumin was studied in different forms, including [R, R]:

- Nano-curcumin
- Curcumin powder
- Curcumin capsules

Please note: curcumin may interfere with iron absorption due to its iron-chelating properties, potentially exacerbating anemia or making it harder to manage. If you have anemia, consult your healthcare provider before using curcumin or turmeric supplements [R, R, R].

5  **SAM-e**

IMPACT
●●○○○ 2 / 5

EVIDENCE
●●●○○ 3 / 5

How to implement

Take 400-1600 mg of SAM-e as a supplement daily, preferably on an empty stomach to enhance absorption. It is often recommended to start with low dosage and observe how your body responds over a few weeks, adjusting as necessary under the guidance of a healthcare provider.

TYPICAL STARTING DOSE

400 mg

Description

SAM-e is a chemical that helps maintain liver and brain health. Your body makes SAM-e from the amino acid *methionine*, but it's also available as a supplement [\[R\]](#).

SAM-e supplementation may help with:


- Joint pain [\[R\]](#)
- Liver disease [\[R\]](#)
- Depression [\[R\]](#)

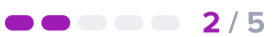
Please note: SAM-e may not be safe for people with a bipolar disorder. It may also interact with 5-HTP, St. John's wort, and different medications.

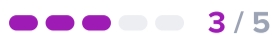
Combining it with antidepressants can be dangerous and even life-threatening. Never take SAM-e supplements without consulting your doctor [\[R\]](#), [\[R\]](#), [\[R\]](#).

How it helps

According to many studies, SAM-e may help reduce ALT levels in people with bile staling and other liver problems. One study didn't find this benefit in people with alcoholic liver disease [\[R\]](#), [\[R\]](#), [\[R\]](#).

6  **Turmeric**

IMPACT  2 / 5

EVIDENCE  3 / 5

How to implement

Incorporate 500-1000 mg of turmeric into your daily diet, either by adding ground turmeric spice to your food, such as in curries, soups, and smoothies, or by taking a dietary turmeric supplement. This should be done daily for at least 8 weeks to observe potential health benefits.


Description

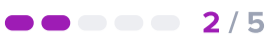
Turmeric is a bright yellow spice derived from the root of the *Curcuma longa* plant. It contains curcumin, a potent antioxidant and anti-inflammatory compound. Turmeric is used for various health conditions, including reducing inflammation, alleviating joint pain, and supporting digestive health.

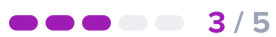
How it helps

Turmeric contains curcumin, an active component that lowers levels of enzymes like ALT, which when increased can indicate liver damage. Thus, turmeric may help protect the liver by reducing ALT enzyme levels.

A [meta-analysis of 31 trials](#) concluded that supplementation with turmeric **lowers ALT (by 4.09 U/L) and AST (by 3.81 U/L)** [\[R\]](#).

7  **L-Carnitine**

IMPACT  2 / 5

EVIDENCE  3 / 5

How to implement

Take 500 mg of L-carnitine supplement daily with a glass of water, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

500 mg

Description

L-carnitine is an amino acid-like compound that plays a role in energy metabolism and helps prevent toxic substances from building up in cells. It is often used in dietary supplements for its potential to support muscle recovery, reduce fatigue, and enhance athletic performance.

L-carnitine is a compound that helps you burn fat. It also prevents toxic substances from building up in cells [\[R\]](#).

Your body can usually make enough carnitine to meet its needs. You can also get it from **meat and dairy products** [\[R\]](#).

People use L-carnitine for [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Heart problems
- Overactive thyroid
- Fertility problems
- Blood sugar control
- Weight control


How it helps

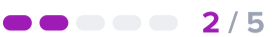
L-carnitine aids in transporting fatty acids into cells for energy production, which can help reduce ALT levels by reducing excess liver fat. A decrease in high ALT levels indicates a reduction in liver damage, potentially improving your liver health.

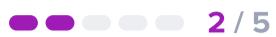
In 18 randomized controlled trials (RCTs) with 1161 participants, L-carnitine supplementation at doses ranging from 500 to 4000 mg/day significantly reduced serum ALT, AST, and GGT levels. Higher doses (≥ 2000 mg/day), longer durations (> 12 weeks), and supplementation in people with liver disease showed more significant effects [\[R\]](#).

In a meta-analysis of 16 studies with 1025 participants, L-carnitine supplementation significantly reduced ALT, AST, and GGT levels. However, this effect was not significant in normal-weight and healthy subjects [\[R\]](#).

In a meta-analysis of 15 studies involving 12,221 participants, L-carnitine supplementation showed significant improvements in fasting blood glucose, insulin, HOMA-IR, triglycerides, total cholesterol, LDL cholesterol, and ALT levels. However, no significant effect was observed on HDL cholesterol or AST levels [\[R\]](#).

8  **Artichoke**

IMPACT  2 / 5

EVIDENCE  2 / 5

How to implement

Incorporate fresh or cooked artichoke into your diet 2-3 times per week. Each serving should include approximately one medium-sized artichoke or about 120 grams if using hearts. This can be included in meals such as salads, pastas, or as a steamed side dish.


Description

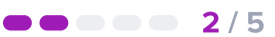
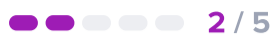
Artichokes are a vegetable known for their unique flavor and potential health benefits. They are a good source of fiber, vitamins, and minerals, and may support digestion, liver health, and antioxidant protection.

How it helps

Eating artichoke can help lower ALT levels by promoting liver health as it contains cynarin, a substance known to stimulate bile production and aid in fat digestion. Additionally, its antioxidants can help protect your liver cells from damage.

A [meta-analysis of 8 trials](#) concluded that supplementation with artichokes **lowers ALT and AST, especially in NAFLD patients or those with excess weight** [\[R\]](#).

9  **Avoid PCBs**

IMPACT  **EVIDENCE** 

How to implement

To avoid PCBs (Polychlorinated Biphenyls), do not use old electrical equipment manufactured before 1977, avoid consuming fish from contaminated waters, especially larger species such as shark and swordfish which are higher in the food chain, and check for and properly dispose of any old fluorescent lighting fixtures that may contain PCBs. Pay attention to local advisories regarding the safety of locally caught fish and wildlife.

Description

PCBs are toxic chemicals that can cause cancer, reproductive problems, and developmental problems. Avoiding exposure to PCBs is important for protecting your health.

Polychlorinated biphenyls (PCBs) are man-made chemicals. They were used in the industry until their **ban in 1979**. PCBs are considered **persistent organic pollutants** (POPS) due to their slow degradation in the environment. They may also **accumulate** in the food chain and the human body [\[R, R\]](#).

We may be exposed to PCBs through contaminated [\[R, R\]](#):

- **Food** (e.g., fish, meat, rice)
- Soil
- Air

PCBs may have toxic effects on [\[R, R\]](#):

- Immunity
- Nervous system
- Reproductive system
- Hormone levels

They may also increase the risk of cancer and reduce lifespan [\[R, R\]](#).


How it helps

Avoiding PCBs, a group of man-made chemicals, can help manage ALT (Alanine aminotransferase) levels in your body. High levels of PCBs are associated with liver damage, which is indicated by increased ALT levels.

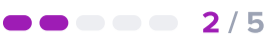
A [study of 1456 participants](#) found a **dose-dependent association between PCB levels and ALT elevation** [\[R\]](#).

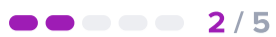
A [study of 1935 participants](#) associated high exposure to PCBs with **increased levels of AST, ALT, and GGT** [\[R\]](#).

10



Avoid Organochlorine Pesticide Exposure

IMPACT


EVIDENCE


How to implement

Minimize exposure by choosing organic fruits and vegetables, thoroughly washing produce before consumption, and avoiding areas where organochlorine pesticides are applied. Consider using air purifiers in homes close to agricultural areas to reduce indoor pesticide levels.

Description

Reducing organochlorine pesticide exposure involves minimizing contact with pesticides like DDT, which can accumulate in the body and potentially lead to adverse health effects, including disruption of hormonal functions and carcinogenicity.

How it helps

Reducing organochlorine pesticide exposure can help lower your ALT levels. This is because these types of pesticides can cause liver damage, which often results in raised ALT levels.

A [study of 1935 participants](#) associated high exposure to organochlorines with **increased levels of AST, ALT, and GGT** [R].

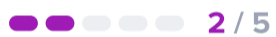
Another [study \(4582 participants\)](#) associated high exposure to organochlorine insecticides with a **3.5-fold higher risk of ALT elevation** [R].

11



Tyrosol

IMPACT


EVIDENCE


How to implement

Take a tyrosol supplement of approximately 10 to 50 milligrams per day, ideally with a meal to enhance absorption. Continuous daily intake is recommended for at least 8 to 12 weeks to evaluate benefits.

TYPICAL STARTING DOSE

10 mg

Description

Tyrosol is a phenolic compound found in olive oil and is known for its antioxidant properties. It is used for its potential to protect cells from oxidative damage and support cardiovascular health.

How it helps

A nutraceutical with red yeast rice (10 mg), phytosterols (800 mg), and L-tyrosol (5 mg) taken for 8 weeks improved ALT in a placebo-controlled trial of 60 patients with hypercholesterolemia [R].

Tyrosol has beneficial antioxidant properties that can reduce liver inflammation and damage, potentially reducing ALT levels.

12  **Cinnamon**

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Take a 1 g cinnamon supplement once daily, ideally with a meal to aid absorption. This can be in the form of a capsule or tablet. Continue this regimen as long as it aligns with your health goals and under the guidance of a healthcare provider.

TYPICAL STARTING DOSE

500 mg

Description

Cinnamon is a popular spice that may have various health benefits, including improving blood sugar control, reducing inflammation, and providing antioxidants. It's commonly used in both culinary and herbal applications.

[Cinnamon](#) is a spice made from the bark of *Cinnamomum* trees. Cinnamon can [\[R\]](#):

- Decrease inflammation
- Fight [oxidative stress](#)
- Kill microbes

Cinnamon is mainly used in cooking and fragrances. **As a natural remedy, people use cinnamon to reduce blood sugar** [\[R\]](#).

There are two main types of cinnamon [\[R\]](#):

- Ceylon or 'true' cinnamon (*Cinnamomum verum*)
- Chinese or Cassia cinnamon (*Cinnamomum cassia*)

How it helps

Cinnamon has been shown to improve the body's sensitivity to insulin, a hormone that regulates blood sugar levels. This could potentially help normalize ALT levels, which can be elevated in conditions like diabetes or liver disease.

In a [systematic review and meta-analysis of 7 randomized controlled trials](#), cinnamon supplementation (<1500 mg/day for at least 12 weeks) **lowered alanine aminotransferase (ALT)**. However, it did not change alkaline phosphatase (ALP) or aspartate aminotransferase (AST) levels [\[R\]](#).

13



Avoid Cadmium Exposure

IMPACT

2 / 5

EVIDENCE

1 / 5

How to implement

To avoid cadmium exposure, refrain from smoking or exposure to secondhand smoke, reduce consumption of foods high in cadmium like shellfish, liver, kidney meats, and certain leafy vegetables, and use ceramic or glass containers instead of plastic when microwaving food. Limit intake of cadmium-contaminated workplace air by using protective gear if you work in battery manufacturing, welding, or metal refining industries.

Description

Avoiding cadmium exposure is essential to prevent potential health risks associated with this heavy metal, such as kidney damage and increased cancer risk. Reducing exposure to cadmium-containing products and contaminated foods is crucial.

Heavy metals are elements naturally found in the environment. They are also used for agricultural, industrial, and medicinal purposes. Some can even be found in small amounts in your body [\[R, R\]](#).

Long-term exposure to high amounts of heavy metals can be harmful to your health [\[R, R\]](#).

Heavy metals that are most often linked to health problems include [\[R, R\]](#):


- Lead
- Cadmium
- Arsenic
- Chromium
- Mercury

How it helps

In a study of 15,783 subjects, serum cadmium levels were significantly linked to elevated ALT, substantial liver steatosis, and fibrosis. Multivariate logistic regression revealed that individuals in the fourth quartile of serum cadmium had higher odds of ALT elevation and hepatic steatosis (compared to the first quartile [\[R\]](#)).

Cadmium may damage the liver, potentially raising ALT levels.

14



Honey

IMPACTEVIDENCE

1 / 5

3 / 5

How to implement

Consume 1-2 tablespoons of raw honey daily, either directly or by mixing it into warm water, tea, or yogurt. Continue this practice regularly to observe benefits.

Description

Honey is a natural sweetener known for its antimicrobial properties and potential benefits for wound healing. It contains antioxidants and may have soothing effects on sore throats and coughs.

[Honey](#) is a thick, sweet substance. It's made by honeybees from the nectar of flowering plants. There are many different types of honey. Besides sugar, honey also contains amino acids (protein building blocks), vitamins, and minerals [\[R\]](#).

People use honey for its anti-inflammatory and antioxidant properties. It can potentially help with [\[R\]](#):


- Heart problems
- Gut problems
- Cough
- Burns

How it helps

Honey can help improve ALT (Alanine Aminotransferase) levels because it has antioxidant properties that may help protect the liver from damage. A damaged liver can lead to elevated ALT levels, so contributing to its health can potentially normalize these levels.

A [meta-analysis of 18 trials](#) found **low-certainty evidence** that honey, **especially Robinia, clover, and unprocessed raw honey, reduces total cholesterol (by 0.18 mmol/L), LDL-cholesterol (by 0.16 mmol/L), triglycerides (by 0.13 mmol/L), and ALT (by 9.75 U/L)** and **high-certainty evidence that it increases HDL-cholesterol (by 0.07 mmol/L)** [\[R\]](#).

However, a [meta-analysis of 23 studies](#) concluded that honey has **no significant effects on cholesterol and triglyceride levels** [\[R\]](#).

15  **Taurine**

IMPACT 1 / 5

EVIDENCE 2 / 5

How to implement

Take 1-4 g of taurine supplement daily, divided into two or three doses with meals for optimal absorption. It can be taken continuously, with periodic evaluations of its effects and benefits.

TYPICAL STARTING DOSE

500 mg

Description

Taurine is an amino acid found in various foods and often used in energy drinks and supplements. It plays a role in neurological and cardiovascular health and can help support energy metabolism.

[Taurine](#) is the most abundant free amino acid in humans. It's not essential, which means we can produce it. We can also get it from protein-rich foods, such as [\[R\]](#):

- Seafood
- Meat
- Dairy

Taurine is a popular additive in energy drinks and can also be taken as a supplement [\[R\]](#).

Taurine plays an important role in [\[R\]](#), [\[R\]](#):

- Bile production
- Calcium metabolism

It is also well-known for its antioxidant and anti-inflammatory properties [\[R\]](#).


How it helps

Taurine supplementation has been studied for its effects on reducing alanine aminotransferase (ALT) levels in humans, particularly in individuals with chronic liver conditions.

A study involving chronic alcoholic patients, who typically exhibit elevated ALT levels due to liver damage, found that taurine supplementation (6g per day for three months) significantly decreased ALT activities along with other indicators of liver damage. This suggests that taurine plays an antioxidative role and aids in liver function improvement in chronic alcoholic patients [\[R\]](#).

Another relevant study on chronic hepatitis patients showed that dietary taurine (2g three times a day for three months) significantly reduced ALT levels and improved other liver function tests, indicating that taurine may ameliorate liver injury in this patient group [\[R\]](#).

These findings highlight taurine's potential as a therapeutic agent in managing liver health and reducing ALT levels in humans with chronic liver diseases.

16  **Almonds**

IMPACT 1 / 5 | **EVIDENCE** 1 / 5

How to implement

Incorporate a handful of almonds (about 23 kernels) into your daily diet. You can eat them as a snack, add them to your breakfast cereals or yogurt, or include them in salads and other dishes. Do this consistently for ongoing health benefits.

Description


Almonds are a good source of omega-6s, protein and vitamins, making for a great snack food. A 1-ounce serving provides 3700 mg of omega-6.

Almonds are nutritious tree nuts that originate from the *Prunus dulcis* tree. They are packed with essential nutrients, including healthy fats, fiber, vitamin E, and magnesium, which collectively contribute to heart health, support weight management, and may help regulate blood sugar levels.

How it helps

Almonds are rich in antioxidants and healthy fats that can help reduce inflammation and oxidative stress, supporting liver health. Eating almonds can potentially improve liver function, beneficial for people with high ALT (Alanine aminotransferase), an enzyme associated with liver damage.

Dietary almonds (10g/day) in Pakistani and American varieties reduced liver enzyme levels (AST, ALT, GGT) significantly compared to the control group after 12 weeks [\[R\]](#).

17  **Chlorella**

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 3 to 5 grams of chlorella in tablet or powder form daily, ideally before meals to improve digestion. Continue this supplementation for at least 2 to 3 months to observe benefits.

TYPICAL STARTING DOSE**3 g**

Description

Chlorella is a microalga from freshwater. People consume chlorella in rice, pancakes, or tea. It can also be found as a supplement [R, R].

Chlorella is **rich in protein** and several micronutrients. It may be useful to [R, R, R, R, R, R, R, R]:

- Reduce blood sugar
- Lower cholesterol
- Reduce blood pressure
- Improve immunity

How it helps

In a placebo-controlled trial of 18 patients with chronic hepatitis C, supplementation with chlorella for 12 weeks lowered ALT levels in 84.61% of the patients [R].

18  **Royal Jelly**

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take a royal jelly supplement daily, starting with a dose of approximately 300 mg to 500 mg. It can be consumed either in capsule form or directly, depending on your preference, for a period ranging from 3 to 6 months to observe the potential health benefits.

TYPICAL STARTING DOSE**300 mg**


Description

Royal jelly is a nutrient-rich substance secreted by worker bees to feed bee larvae and the queen bee. Royal jelly contains protein B-vitamins, calcium and iron. It is taken as a supplement for its potential energy-boosting and immune-supporting properties.

How it helps


In a placebo-controlled trial of 100 healthy volunteers, supplementation with royal jelly (690 mg/day) for 4 weeks **reduced ALT levels by 6.06% (vs +11.6% in the placebo group)** [R].


19



Clostridium Butyricum

IMPACT
EVIDENCE





How to implement

Take Clostridium butyricum as a supplement in capsule or powder form, typically ranging from 300 to 450 mg per day. This should be consumed with a glass of water, ideally before meals. Continue daily for at least four weeks to evaluate its benefits.

TYPICAL STARTING DOSE
300 mg

Description

Clostridium butyricum is a probiotic bacterium believed to support digestive health by producing beneficial short-chain fatty acids in the gut. It is used in some probiotic supplements to promote gut microbiome balance and overall well-being.

How it helps

Clostridium Butyricum is a probiotic that may assist in reducing ALT (Alanine Aminotransferase) levels by promoting a healthy gut environment, which is beneficial for liver health. Thus, this supplement could potentially help in treating conditions linked with high ALT levels, like liver disease.

In a [non-placebo-controlled trial of 96 patients with NAFLD](#), supplementation with C butyricum as an add-on to rosuvastatin **improved intestinal flora imbalance, reduced blood lipid (total cholesterol, triglycerides, free fatty acids) levels, and alleviated liver fibrosis and liver function damage markers (bilirubin, AST, ALT)** [R].

20



Celery Seed

IMPACT
EVIDENCE





How to implement

Take a celery seed supplement capsule of 600-1000 mg daily with a glass of water, preferably with a meal to aid absorption and minimize potential stomach discomfort. Continue this regimen for at least 4-6 weeks to evaluate its effects on your condition.

TYPICAL STARTING DOSE
600 mg


Description


Celery seed extract is a natural supplement derived from the seeds of the celery plant, known scientifically as **Apium graveolens**. This extract is rich in various bioactive compounds, including flavonoids, linoleic acid, and volatile oils like limonene and selinene. These compounds contribute to its potential health benefits, which may include anti-inflammatory properties, support for joint health (often used in treating conditions like arthritis), and assistance in managing blood pressure levels. Celery seed extract is available in various forms, including capsules, tablets, and tinctures, and is often used in traditional medicine for its diuretic and antispasmodic effects.


How it helps

In a placebo-controlled trial of 51 patients with hypertension, supplementation with celery seed extract (1.34 g/day) for 4 weeks reduced ALT by 4.08 U/L [R].

Celery seed may help by reducing inflammation and oxidative damage in the liver.

21  **Mastic Gum**

IMPACT  1/5

EVIDENCE  1/5

How to implement

Take 350-1000 mg of mastic gum in capsule form daily, usually divided into two doses - morning and evening, with a glass of water. Follow these instructions for at least two weeks to see improvements in digestive health.

TYPICAL STARTING DOSE

350 mg

Description

Mastic gum is a natural resin with potential digestive health benefits. It's believed to support gastrointestinal comfort and may help alleviate symptoms of conditions like indigestion and acid reflux.


[Mastic](#) is a resin from the mastic tree. The mastic tree is native to the Greek island of Chios [\[R\]](#), [\[R\]](#).


Mastic is consumed as a chewing gum, used in cosmetics, and added to foods and drinks as a sweetener. People also take it to potentially help with gut problems [\[R\]](#).


How it helps

In a study of 133 subjects aged over 50, those in the high-dose group consuming 5 g of mastic powder daily experienced significant reductions in serum total cholesterol, LDL, total cholesterol/HDL ratio, lipoprotein (a), apolipoprotein A-1, apolipoprotein B, ALT, AST, and GGT levels [\[R\]](#).

Mastic gum may help by protecting the liver from damage.

22  **Pentadecanoic Acid (C15:0)**

IMPACT  1 / 5

EVIDENCE  1 / 5

How to implement

While there is no officially recommended daily intake for pentadecanoic acid, research suggests that **20–50 mg per day** may support health benefits such as improved metabolism, reduced inflammation, and enhanced cellular health. You can achieve this through a balanced diet rich in full-fat dairy and fatty fish or by taking supplements as directed. Always consult with a healthcare professional before starting supplementation, especially if you have specific health conditions or dietary restrictions.


Description

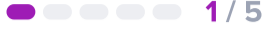
Pentadecanoic acid, also known as C15:0, is a 15-carbon saturated fatty acid that belongs to the group of odd-chain fatty acids. It is naturally found in full-fat dairy products (e.g., milk, butter, and cheese), certain fish, and some plant sources. Unlike even-chain fatty acids, pentadecanoic acid has unique biological properties that are being increasingly studied for its potential health benefits.

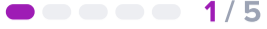
Supplementation with pentadecanoic acid has shown promise in supporting metabolic health by improving cholesterol levels, enhancing insulin sensitivity, and reducing inflammation. It may also promote cellular health by stabilizing cell membranes and improving mitochondrial function. Additionally, C15:0 has been linked to better immune system regulation, neuroprotection, and potentially reducing the risk of chronic diseases like diabetes and cardiovascular conditions. As an emerging "essential fatty acid," it is gaining attention for its role in promoting long-term health and wellness.

How it helps

In a placebo-controlled trial of 30 overweight and obese participants, achieving a blood pentadecanoic acid concentration of at least 5 µg/mL through supplementation (200 mg/day for 12 weeks) lowered ALT (by 29 U/L) and AST (by 6 U/L) while increasing hemoglobin (by 0.60 g/dL) [\[R\]](#).

23  **Picrorhiza Kurroa**

IMPACT  1/5

EVIDENCE  1/5


Description

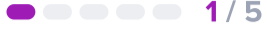
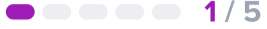
Picrorhiza kurroa, also known as Kutki, is a perennial herb native to the Himalayan region and other parts of Asia. It has a long history of use in traditional Ayurvedic medicine for its various health benefits. Its main active compounds are kutkin, picroside I, and picroside II. These compounds are believed to possess antioxidant, anti-inflammatory, hepatoprotective, and immunomodulatory properties.

In Ayurveda, *P. kurroa* is primarily valued for its ability to support liver health and promote detoxification. It is often used to treat liver disorders such as jaundice, hepatitis, and liver cirrhosis. Alternatively, it can be used to boost digestion, alleviate respiratory conditions like asthma and bronchitis, and support overall immune function.

How it helps

In a placebo-controlled trial of 33 patients with acute viral hepatitis, supplementation with *Picrorrhiza kurroa* root powder (375 mg, 3x/day) for 2 weeks lowered bilirubin, AST, and ALT [\[R\]](#).

24  **Milk Thistle (Silymarin)**

IMPACT  **EVIDENCE** 

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

In a two-week study, 25 participants took nano-silymarin, while 25 took a placebo. Symptoms, labs, and hospitalization didn't differ significantly. However, alanine aminotransferase levels decreased in the treatment group ($p < 0.001$) [\[R\]](#).

According to studies in people with COVID-19 and hepatitis, silymarin may reduce ALT levels. However, not all studies found this benefit [\[R, R, R\]](#).

25

Lactobacillus Delbrueckii and S. Thermophilus

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take a probiotic supplement that contains *Lactobacillus delbrueckii* and *Streptococcus thermophilus*. Follow the dosage instructions on the product label, typically once daily, preferably with meals or as directed by your healthcare provider. Continue this regimen for at least 4 to 8 weeks to evaluate its effects.

TYPICAL STARTING DOSE

10 billion CFU

Description

Lactobacillus Delbrueckii and *S. Thermophilus* are types of bacteria that are good for your body, especially your gut. These bacteria are usually found in yogurt and other fermented foods. They help digest food, fight off harmful bacteria, and maintain a healthy balance in your digestive system.

How it helps

In a placebo-controlled trial of 28 patients with NAFLD, supplementation with a combination of *S. thermophilus* and *L. delbrueckii* (500 million/day) for 3 months decreased ALT (by 7.3 UI/L), AST (by 5.7 IU/L), and GGT (by 10.5 IU/L) levels [R].

26

Cordyceps

IMPACT

1 / 5

EVIDENCE

1 / 5

How to implement

Take 500-1000 mg of Cordyceps extract in supplement form once daily, preferably with a meal to enhance absorption. This dosage is commonly recommended for general wellness and should be continued on a long-term basis, as effects accumulate over time.

TYPICAL STARTING DOSE

500 mg

Description


Cordyceps is a type of medicinal mushroom known for its potential to boost endurance and enhance respiratory function. It's used in traditional medicine and dietary supplements to support physical performance and overall vitality.

[Cordyceps](#) are a group of fungi (mushrooms) that grow on insects. Some species, like *O. sinensis* and *C. militaris*, are used in supplements [R].

O. sinensis grows on a moth caterpillar. Extracts and teas made from the fungus-caterpillar combination are often used in traditional Chinese medicine. They are thought to boost sex drive, reduce fatigue, and support kidney health [R, R, R].

How it helps

In a non-placebo-controlled trial of 60 patients with chronic hepatitis B, supplementation with cordyceps (24x/day for 6 months) **lowered liver fibrosis and inflammation, as well as serum ALT, AST, HA, PC-III, and LN levels** [R].

27  **L-Citrulline**

IMPACT 1/5 **EVIDENCE** 1/5

How to implement

Take 1.5 to 5 grams of L-citrulline supplements per day, orally, with or without food. This dosage can be taken all at once or divided into two to three smaller doses throughout the day. It's generally recommended to start at the lower end of the dosage range and adjust based on your body's response.

TYPICAL STARTING DOSE**3 g**

Description

L-citrulline is an amino acid that may help improve blood flow and reduce muscle soreness, making it a popular supplement for athletes and individuals with certain cardiovascular conditions. Its potential to enhance nitric oxide production supports vascular health and overall circulation.

Citrulline is an amino acid (protein building block). Citrulline can be found in foods like [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Watermelon
- Pumpkins
- Cucumber
- Bitter melon

The body uses L-citrulline to produce nitric oxide, a compound that helps widen blood vessels. It is important for heart and sexual health [\[R\]](#), [\[R\]](#), [\[R\]](#).


L-citrulline is commonly used as supplement to support [\[R\]](#):

- Blood vessel health
- Muscle health
- Metabolic health
- Sexual health

How it helps

L-Citrulline can decrease liver disease markers, including ALT, because it boosts nitric oxide production, which improves blood flow and reduces inflammation in the liver. However, its efficacy as a primary treatment for elevated ALT levels is not established yet.

In a placebo-controlled trial of 50 patients with NAFLD, supplementation with citrulline (2 g/day) for 3 months lowered CRP, TNF-alpha, ALT, and liver steatosis [\[R\]](#).

28  **Avoid Lead Exposure**

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Prevent lead exposure by using cold water for drinking and cooking, regularly cleaning dust from windowsills and floors, and ensuring that your home's paint is not chipping if it was built before 1978. For occupations involving potential lead exposure, use protective gear and follow safety protocols. Test your home for lead if it's old or you're concerned about contamination.

Description

Lead is a heavy metal. It is naturally found in the environment in small amounts [\[R, R\]](#).


Exposure to lead can cause it to build up in the body. A buildup of lead can contribute to oxidative stress and cell damage. This is called **lead poisoning** [\[R, R\]](#).

Lead is no longer used in the manufacturing of some products like gasoline and paint. However, it can still be found in some pipes, batteries, and the wall paint of older homes [\[R, R, R\]](#).

How it helps

A study linked heavy metals (lead and mercury) to higher odds of unexplained ALT elevation, possibly indicating NAFLD [\[R\]](#).

Lead is toxic and can cause liver damage, further increasing ALT levels.

29  **Aloe Vera**

IMPACT 1/5

EVIDENCE 1/5

How to implement

Take a 50 mg Aloe vera supplement daily, with a glass of water, preferably at the same time each day to maintain consistency.

TYPICAL STARTING DOSE

50 mg

Description

Aloe vera is a succulent plant native to arid regions and contains a gel-like substance in its leaves that is rich in vitamins, minerals, and antioxidants, making it beneficial for soothing skin irritations, promoting wound healing, and providing relief from conditions such as sunburn and minor burns. The primary active compounds in aloe vera gel include polysaccharides, vitamins like vitamin C and E, and minerals such as zinc, which contribute to its healing and anti-inflammatory effects.

[Aloe vera](#) lives in the desert, and its thick leaves store water in the form of a gel [\[R\]](#).


People use aloe gel to help soften the skin and soothe burns [\[R\]](#).



Oral aloe supplements may help with blood sugar and gut health [\[R\]](#).

How it helps

In a placebo-controlled trial of 40 patients with liver fibrosis and 15 healthy controls, supplementation with *Aloe vera* high molecular weight fractions (0.15 g/day) for 12 weeks reduced ALT and other markers of liver damage [\[R\]](#).

Aloe vera can help with liver detoxification, promoting an overall healthier liver and potentially reducing ALT levels.

30  **Bacillus Coagulans**

IMPACT  **EVIDENCE** 

How to implement

Take a Bacillus coagulans supplement containing 1 to 2 billion CFUs (colony forming units) daily, with a glass of water, preferably with meals. This routine should be consistently followed for at least four weeks to potentially see benefits.

Description

Bacillus coagulans is a probiotic strain believed to support digestive health and boost the immune system. It's used in various probiotic supplements and may aid in maintaining gut balance.

How it helps

The Bacillus Coagulans supplement helps by promoting a healthy balance of gut bacteria, improving digestion, and enhancing the immune system. However, regarding the condition Alanine Aminotransferase (ALT), a liver enzyme, there's no specific benefit as this probiotic doesn't directly affect liver enzymes.

In a [placebo-controlled trial of 40 healthy overweight participants](#), consuming whole-grain pasta with barley β -glucans and B coagulans BC30, 6086 for 12 weeks **lowered GGT, CRP, and LDL:HDL ratio** [\[R\]](#).

In a [placebo-controlled trial of 53 patients with NAFLD](#), taking a synbiotic with B. coagulans (GBI-30, 109 cfu) and inulin for 12 weeks **lowered ALT, GGT, TNF-alpha, NF-kB, and hepatic steatosis** [\[R\]](#).

31

Lactobacillus Paracasei

IMPACT
1 / 5

EVIDENCE
1 / 5

How to implement

Take a supplement containing *Lactobacillus paracasei* daily, with a dose of around 10 billion colony-forming units (CFUs). Consume the supplement with or without food, but consistently at the same time each day for at least 4 weeks to observe beneficial effects.

TYPICAL STARTING DOSE
10 billion CFU

Description

Lactobacillus paracasei is a beneficial probiotic strain that can support digestive health and contribute to a balanced gut microbiome. It may help improve gut function, enhance nutrient absorption, and bolster the immune system, promoting overall well-being.

[Lactobacillus paracasei](#) is a type of bacteria naturally found in the intestine. It is considered a [probiotic bacteria](#), which means “good” bacteria that has health benefits when taken in adequate amounts [\[R\]](#).

L. paracasei is used in the production of the following fermented foods [\[R\]](#):

- Yogurt
- Cheese
- Sauerkraut

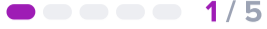
It may help [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

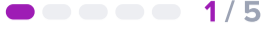
- Improve gut and skin health
- Boost immunity
- Fight allergies

How it helps

In a placebo-controlled trial of 80 healthy volunteers, supplementation with *L. paracasei* IJH-SONE68 for 12 weeks decreased AST and ALT levels, and increased the relative abundance changes within *Anaerostipes*, which has been reported to help suppress hepatic inflammation [\[R\]](#).

32  **Chum Salmon Milt**

IMPACT  1/5

EVIDENCE  1/5

How to implement


Incorporate chum salmon milt into your diet 2-3 times per week, preferably by including it in meals such as sushi, salads, or pasta. It can be consumed cooked or raw, depending on your preference and food safety considerations.

Description

Chum salmon milt, also known as salmon roe or fish sperm, is a nutrient-rich food source high in omega-3 fatty acids, vitamins, and minerals. Consuming chum salmon milt may contribute to heart health, brain function, and overall nutritional well-being.

How it helps

In a placebo-controlled trial of 50 healthy Japanese participants, deoxyribonucleic acid derived from chum salmon milt (for 12 weeks) improved ALT, liver-to-spleen (L/S) ratio, body weight, and BMI. In those with normal weight, it also improved leptin levels [\[R\]](#).

33  **Black Seed (Black Cumin)**

IMPACT 1/5 **EVIDENCE** 1/5

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

In an [uncontrolled trial of 30 patients with hepatitis C](#), supplementation with black seed (450 mg, 3x/day) for 3 months **reduced viral load and TAC, as well as improved total protein, albumin, red blood cell count, platelet count, and fasting glucose** [\[R\]](#).

The combination of black seed (250 mg/day) and ascorbate (1000 mg/day) as an add-on to antivirals for 8 weeks **reduced the levels of AST, ALT, ALP, GGT, bilirubin, and MDA, and increased SOD, TAS, and GSH activity** in a [non-placebo-controlled trial of 30 patients with hepatitis C](#) [\[R\]](#).

34  **Cupping Therapy** IMPACT 1/5 EVIDENCE 1/5

How to implement

To practice cupping therapy as part of your lifestyle, schedule sessions with a qualified therapist once or twice a month to address specific concerns or for general wellness. Each session usually lasts between 5 to 15 minutes. Consistent treatment over several months may yield the best results.

TYPICAL STARTING DOSE
15 minutes

Description

Cupping therapy is an alternative therapy that involves placing cups on the skin to create suction. Some believe it may help with pain relief and muscle tension.

How it helps

Cupping therapy may assist with ALT (Alanine Aminotransferase) levels by potentially promoting blood flow and healing, which is beneficial for liver health. However, its direct impact on ALT levels is not scientifically proven.

In a non-placebo-controlled trial of 120 patients with NAFLD, receiving wet cupping therapy (3 sessions over 1 month) decreased insulin resistance, ALT, and AST, and improved ultrasound images of the liver in 23% of the patients (compared to 10% in the control group) [\[R\]](#).

35  **Purple Sweet Potato** IMPACT 1/5 EVIDENCE 1/5

How to implement

Incorporate 100-150 grams of purple sweet potato into your diet 3-4 times a week. This can be achieved by baking, boiling, or including it in smoothies.


Description

Purple sweet potatoes are a colorful and nutritious variety of sweet potatoes that originated in southeast Asia. They are packed with antioxidants, fiber, and vitamins, especially vitamin A and C, which supports eye health and overall immunity.

How it helps

In [2 placebo-controlled trials of 78 patients with borderline hepatitis](#), consuming a purple sweet potato beverage (250 mL/day) for 8 weeks **lowered ALT levels** [\[R\]](#).

Purple sweet potato is rich in antioxidants that help reduce inflammation in the body, potentially lowering ALT levels.

36  **Avoid Mercury Exposure**

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Limit consumption of large fish such as shark, swordfish, king mackerel, and tilefish, which are known to have higher mercury levels. Opt for smaller fish like salmon, shrimp, pollock, and catfish, and limit seafood intake to 8-12 ounces (two to three servings) per week. Check and follow local advisories regarding the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas.

Description

Avoiding exposure to mercury, a toxic heavy metal found in certain seafood and environmental sources, is essential to prevent adverse health effects, including neurological damage and developmental issues.


Mercury and other [heavy metals](#) are found in the soil, water, food, and some commonly-used household products. They adversely affect the environment and living organisms. According to some studies, mercury is considered **the most toxic heavy metal** in the environment [\[R\]](#), [\[R\]](#).

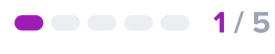
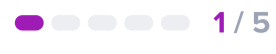
A major source of mercury exposure is seafood, especially large fish such as [\[R\]](#):

- Tuna
- Shark
- Swordfish

How it helps

Avoiding mercury exposure can help preserve your liver function as high levels of mercury could damage liver cells and raise ALT levels. Hence, less mercury exposure reduces the risk of liver inflammation and ALT elevation.

37  **Avoid PAHs Exposure**

IMPACT  **EVIDENCE** 

How to implement

Minimize your exposure to Polycyclic Aromatic Hydrocarbons (PAHs) by avoiding or reducing consumption of charred, grilled, or smoked foods, not smoking or avoiding secondhand smoke, and limiting time spent in areas with heavy traffic or industrial fumes. Use exhaust fans in kitchens and ensure proper ventilation when cooking at high temperatures to reduce indoor levels of PAHs.

Description


PAHs or Polycyclic Aromatic Hydrocarbons are harmful substances found in smoke and grilled foods. Try to limit exposure to them for better health. For example, avoid inhaling smoke from cigarettes or barbeques and choose alternative cooking techniques over grilling. Minimizing PAHs can reduce the risk of several health issues, particularly lung and skin diseases.



How it helps

A study of 3194 adolescents associated exposure to mixed PAHs (especially 2-fluorene with 2.33-fold higher ALT levels [\[R\]](#)).

Another study (288 workers) associated high 2-naphthol exposure with 2.4-fold higher ALT levels and 4.1-fold higher AST levels [\[R\]](#).

PAH may cause liver damage, thus increasing ALT levels.

38  **Propolis**

IMPACT  **EVIDENCE** 

How to implement

Take a propolis supplement in capsule or tablet form, typically ranging from 500mg to 1000mg per day. It's best to follow the dosage instructions on the product label or a healthcare provider's advice. Propolis can be taken continuously, but consult a healthcare provider for specific durations especially if it exceeds three months.

Description

Propolis is a resinous substance collected by bees from tree buds and used to seal their hives. It has been traditionally used in natural medicine for its potential antimicrobial properties and as a source of antioxidants that may support oral and immune health.


Propolis is a waxy compound, also known as “bee glue.” Honeybees make it from plants and use it to build, repair, and protect their hives [\[R\]](#).



People use propolis to potentially help [\[R\]](#):

- Reduce the appearance of acne
- Maintain oral health
- Support the immune system

How it helps

In an 8-week study with 92 obese NAFLD patients, dietary weight loss accompanied by propolis supplementation led to improvements in metabolic parameters and liver steatosis. Propolis had a significant effect on reducing alanine aminotransferase (ALT) levels, suggesting its potential in NAFLD management [\[R\]](#).

39  **Mitoquinone Mesylate (MitoQ)**

IMPACT  **EVIDENCE** 

How to implement


Take MitoQ supplement by swallowing one capsule each morning with water, preferably on an empty stomach to aid in its absorption. This should be done daily for an extended period, often several months, to notice a significant benefit in conditions related to mitochondrial dysfunction or to support overall mitochondrial health.

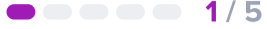
Description

Mitoquinone mesylate is a novel antioxidant compound that targets mitochondria, the energy-producing organelles in cells. It has the potential to support cellular health and may have applications in promoting overall well-being.

How it helps

In a placebo-controlled trial of 30 hepatitis C patients, supplementation with mitoQ (40-80 mg/day) for 28 days decreased ALT levels [\[R\]](#).

40  **Jiaogulan (Gynostemma Pentaphyllum)**

IMPACT  1/5

EVIDENCE  1/5

How to implement

Take a capsule of jiaogulan (*Gynostemma pentaphyllum*) containing 450 mg to 500 mg, three times a day with meals. Continue this routine daily for best results.

TYPICAL STARTING DOSE

1350 mg

Description

Jiaogulan, often referred to as the "immortality herb," is an herb used in traditional Chinese medicine for its potential adaptogenic and antioxidant properties. Some research suggests it may support overall well-being and longevity, but more studies are needed to confirm these effects.

[Gynostemma](#) (*Gynostemma pentaphyllum*), also called jiaogulan, is a climbing vine native to Southeast Asia. It is used in traditional Chinese medicine for [\[R\]](#):

- High cholesterol
- Diabetes


People call it the "poor man's [ginseng](#)" because it may have similar benefits but cost less than Panax (Asian) ginseng [\[R\]](#), [\[R\]](#).


How it helps


Jiaogulan (*Gynostemma pentaphyllum*) has antioxidant properties that can protect liver cells from damage and thus reduce ALT levels.

In a [placebo-controlled trial of 117 overweight participants](#), supplementation with *Gynostemma pentaphyllum* (450 mg/day) for 16 weeks **lowered ALT levels** [\[R\]](#).

In a [placebo-controlled trial of 56 patients with NAFLD](#), supplementation with *Gynostemma pentaphyllum* (80 mL) for 4 months as an add-on to a controlled diet **lowered BMI, AST, ALP, insulin, and HOMA-IR better than the diet alone** [\[R\]](#).

41  **Prunes**

IMPACT  1 / 5

EVIDENCE  1 / 5

How to implement

Eat 5-6 prunes daily, either as a snack or incorporated into meals, to help improve digestion and potentially bone health. Continue this habit consistently for at least a few weeks to observe benefits.

Description

Prunes are dried plums that are rich in dietary fiber, vitamins, and minerals, particularly potassium and vitamin K, as well as antioxidants. They are often consumed to support digestive health and may help regulate bowel movements.


Prunes are a good source of omega-6 fatty acids, vitamin A and B6, potassium, iron, magnesium, and copper. A ½ cup serving provides 635 mcg or 14%DV.

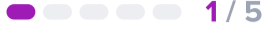
How it helps

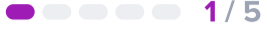
Prunes are rich in dietary fiber, which aids in digestion and helps maintain lower cholesterol levels, indirectly benefiting your liver (where ALT or Alanine Transaminase is found). However, they do not directly affect ALT levels in the body.

In a study with 166 healthy volunteers, those who consumed either three or six prunes soaked in water daily for 8 weeks experienced a significant reduction in serum alanine transaminase and serum alkaline phosphatase levels, compared to the control group. No change was observed in serum aspartate transaminase and bilirubin [\[R\]](#).

We conducted a 6-month, parallel-design controlled clinical trial, where 48 postmenopausal women were randomly assigned to consume 0, 50, or 100 g of dried plum each day. Plasma activities of alanine transaminase (P = .046), lactate dehydrogenase (P = .039), and creatine kinase (P = .030) were significantly lower after 6 months in the 50 g/day dried plum group [\[R\]](#).

42  **Fucoidan**

IMPACT  1/5

EVIDENCE  1/5

How to implement

Take 300 mg of fucoidan supplement once daily, preferably with a meal to aid absorption. Continue this regimen for a minimum of four weeks to evaluate its effects on your health.

TYPICAL STARTING DOSE

300 mg


Description

Fucoidan is a compound found in certain brown seaweeds and marine plants, and it is consumed for its immune system support and anti-inflammatory effects.

How it helps

In a placebo-controlled trial of 42 patients with NAFLD, supplementation with low-molecular-weight fucoidan and high-stability fucoxanthin (275 mg LMF and 275 mg HSFx, 3x/day) for 24 weeks reduced liver fibrosis and steatosis, AST, ALT, total cholesterol, triglycerides, fasting glucose, HbA1c, IL-6, and IFN-gamma [\[R\]](#).

Fucoidan may help by reducing inflammation in the liver.

43  **Alpha-Lipoic Acid**

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

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

TYPICAL STARTING DOSE

600 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 acts as a potent antioxidant, which may help in the stabilization of liver enzymes including ALT levels. It helps to improve liver function by removing free radicals and improving insulin sensitivity.

44



Dietary Antioxidants

IMPACT

0 / 5

EVIDENCE

0 / 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

Antioxidants combat oxidative stress and may reduce the risk of chronic diseases. Including foods high in antioxidants can support overall well-being.

45  **Methylsulfonylmethane (MSM)**

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 1 to 3 grams of Methylsulfonylmethane (MSM) per day, divided into three doses. This can be in the form of capsules or powder that is mixed with water. It is recommended to start with a lower dose to assess tolerance, then gradually increase to the desired dose over a period of 1 to 2 weeks.

TYPICAL STARTING DOSE

1g

Description

MSM is a naturally occurring sulfur compound found in foods and used in dietary supplements. It has anti-inflammatory properties and may be used to support joint health and reduce exercise-related muscle soreness.

A molecule of MSM is broken down in the body into a sulfate (sulfur) group and two methyl groups.

The following may increase people's needs for sulfur and methyl groups: physical activity, recovery from injuries, inflammation, infections/sickness, toxins, etc.

People also need more sulfur when taking hormones (DHEA, pregnenolone, etc.), drugs (Aspirin, Tylenol, NSAIDs, birth control, etc.) or supplements (flavonoids & polyphenols - resveratrol, quercetin, curcumin, etc.) that undergo sulfation.

How it helps

Here are a few mechanisms through which MSM might reduce ALT levels:

- **Anti-inflammatory properties:** MSM can reduce inflammation in the liver, which might lower ALT levels by reducing hepatic inflammation and subsequent hepatocyte damage.
- **Antioxidant effects:** By acting as an antioxidant, MSM could protect liver cells from oxidative stress, which is a key factor in many forms of liver damage. Reducing oxidative stress could help maintain liver health and normalize ALT levels.
- **Detoxification support:** MSM might improve the liver's detoxification capabilities by enhancing the production of glutathione, a critical antioxidant in the liver's detoxification pathways. This could indirectly lead to reduced ALT levels by improving liver health.

A study explored MSM's effects on exercise-induced oxidative stress, muscle damage, and pain following a half-marathon. This study indicates MSM's potential for managing oxidative stress and inflammation, which are significant factors in liver health and could theoretically influence ALT levels, although the study itself did not measure ALT [\[R\]](#).

46

Lactobacillus Bulgaricus

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a supplement containing Lactobacillus bulgaricus at the dosage advised on the product label, typically once or twice daily with a glass of water, preferably with meals to support digestion and absorption. Continue this regimen daily for at least one month to evaluate its effects on your digestive health.

TYPICAL STARTING DOSE
10 billion CFU

Description

Lactobacillus bulgaricus is another probiotic bacterium commonly used in dairy fermentation and probiotic supplements. It supports digestive health and may help improve lactose digestion in individuals with lactose intolerance.

How it helps

Lactobacillus Delbrueckii is reported to help lower ALT levels, which is beneficial for liver health as ALT is an enzyme that increases when the liver is damaged. Therefore, maintaining lower ALT levels can help prevent and treat liver diseases.

In a placebo-controlled trial of 28 patients with NAFLD, supplementation with a combination of *S. thermophilus* and *L. delbrueckii* (500 million/day) for 3 months decreased ALT (by 7.3 UI/L), AST (by 5.7 IU/L), and GGT (by 10.5 IU/L) levels [R].

47

Streptococcus Thermophilus

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take a supplement containing Streptococcus thermophilus according to the product's label, typically once or twice daily with a glass of water. It is commonly found in probiotic supplements and the exact dosage can vary, so following the manufacturer's guidelines is essential. Continue use as part of your daily routine or as directed by a health professional.

TYPICAL STARTING DOSE
10 billion CFU

Description

Streptococcus thermophilus is a probiotic bacterium used in the fermentation of dairy products like yogurt. It contributes to improved gut health by aiding in the digestion of lactose and promoting the growth of beneficial gut bacteria.

How it helps

In a placebo-controlled trial of 28 patients with NAFLD, supplementation with a combination of *S. thermophilus* and *L. delbrueckii* (500 million/day) for 3 months decreased ALT (by 7.3 UI/L), AST (by 5.7 IU/L), and GGT (by 10.5 IU/L) levels [R].

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.

