SelfDecode™

ALT

Biohacker Report

REPORT CATEGORY

LIVER HEALTH

Sample Client

Report date: 29 July 2025

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Personal information

NAME

Sample Client

SEX AT BIRTH

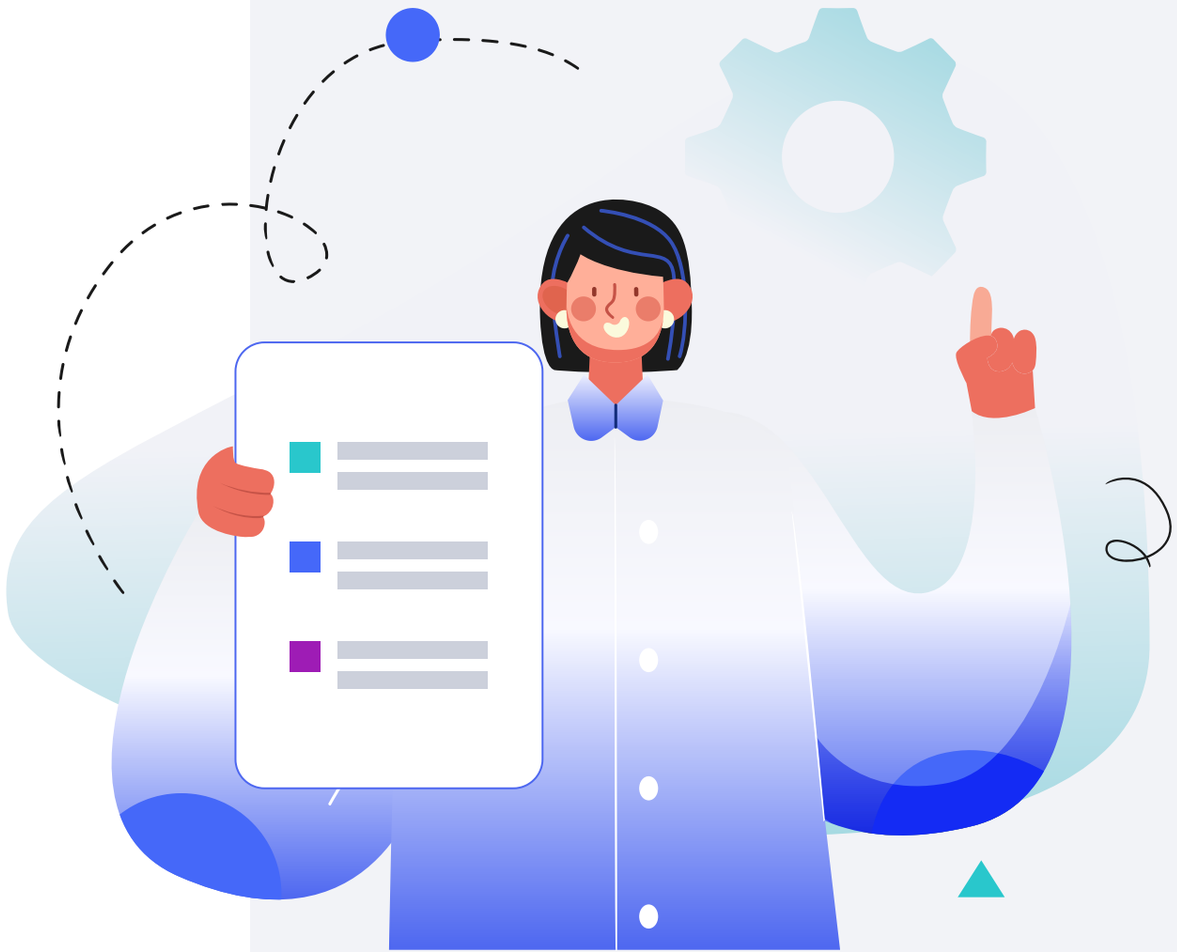
Female

HEIGHT

5ft 9" 175.0cm

WEIGHT

165lb 75.0kg



DISCLAIMER

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

Introduction

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].

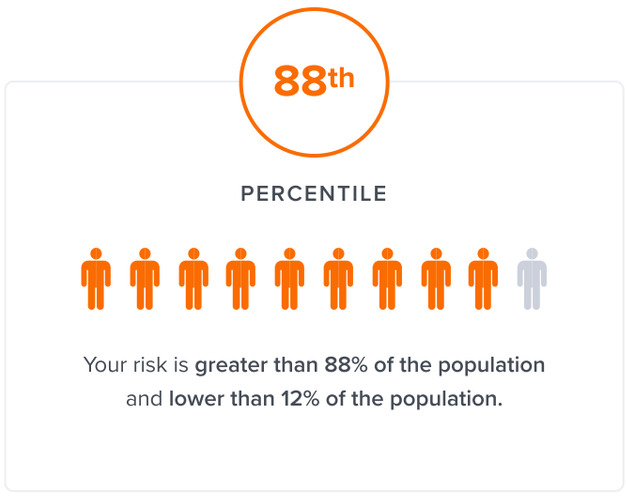
Genetic predisposition to higher fasting insulin may be associated with increased ALT [R].

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
/	rs540739941	GG
ERLIN1	rs2862954	TC
MTARC1	rs2642438	GG
APOL3	rs132631	CA

GENE	SNP	GENOTYPE
CPLANE2	rs1497406	GA
SERPINA1	rs28929474	CC
ZDHHC18	rs114165349	GG
A1CF	rs151068477	GG
PHF23	rs117643180	CC
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
1	Keto Diet	
2	Curcumin	500 mg
3	SAM-e	400 mg
4	Turmeric	
5	L-Carnitine	500 mg
6	Artichoke	
7	Avoid PCBs	
8	Avoid Organochlorine Pesticide Exposure	
9	Tyrosol	10 mg
10	Cinnamon	500 mg
11	Avoid Cadmium Exposure	
12	Honey	
13	Coffee	
14	Taurine	500 mg
15	Almonds	

1

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].

2

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].

3

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].

4

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].

5

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].

6

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 l**owers ALT and AST, especially in NAFLD patients or those with excess weight** [R].

7

Avoid PCBs

IMPACT 2 / 5

EVIDENCE 2 / 5

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].

8

Avoid Organochlorine Pesticide Exposure

IMPACT 2 / 5

EVIDENCE 2 / 5

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].

9

Tyrosol

IMPACT 2 / 5

EVIDENCE 2 / 5

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.

10

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) l**owered alanine aminotransferase (ALT)**. However, it did not change alkaline phosphatase (ALP) or aspartate aminotransferase (AST) levels [R].

11

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.

12

Honey

IMPACT 1 / 5

EVIDENCE 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].

13

Coffee

IMPACT 1 / 5

EVIDENCE 2 / 5

How to implement

Drink 1 to 3 cups of black coffee daily, preferably in the morning to minimize potential sleep disturbances. Avoid adding sugar or cream to keep it healthy. Continue this habit daily for long-term benefits.

Description

Coffee is a drink extracted from the roasted seeds (beans) of the coffee plant. Coffee consumption, in moderation, has been associated with potential health benefits, including improved alertness, cognitive function, and reduced risk of certain chronic diseases like Parkinson's and type 2 diabetes.

People drink coffee for an energy and mood boost. Caffeine is the main ingredient responsible for these effects [R, R].

Drinking moderate amounts of coffee may also [R, R, R]:

- Improve heart health
- Improve mood
- Help reduce blood sugar

How it helps

A meta-analysis of 19 studies and 222,067 participants found that coffee consumption was associated with a lower level of ALT and AST [R].

Please note: *polyphenols and tannins from coffee may bind to iron and form insoluble complexes, which reduces iron absorption in the gut. If you have anemia, consult your healthcare provider before using coffee or coffee supplements.*

14

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.

15

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].