SelfDecode™

Cadmium

DNA Health Report

REPORT CATEGORY

DETOX

Sample Client

Report date: 15 January 2026

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Personal information

NAME

Sample Client

SEX AT BIRTH

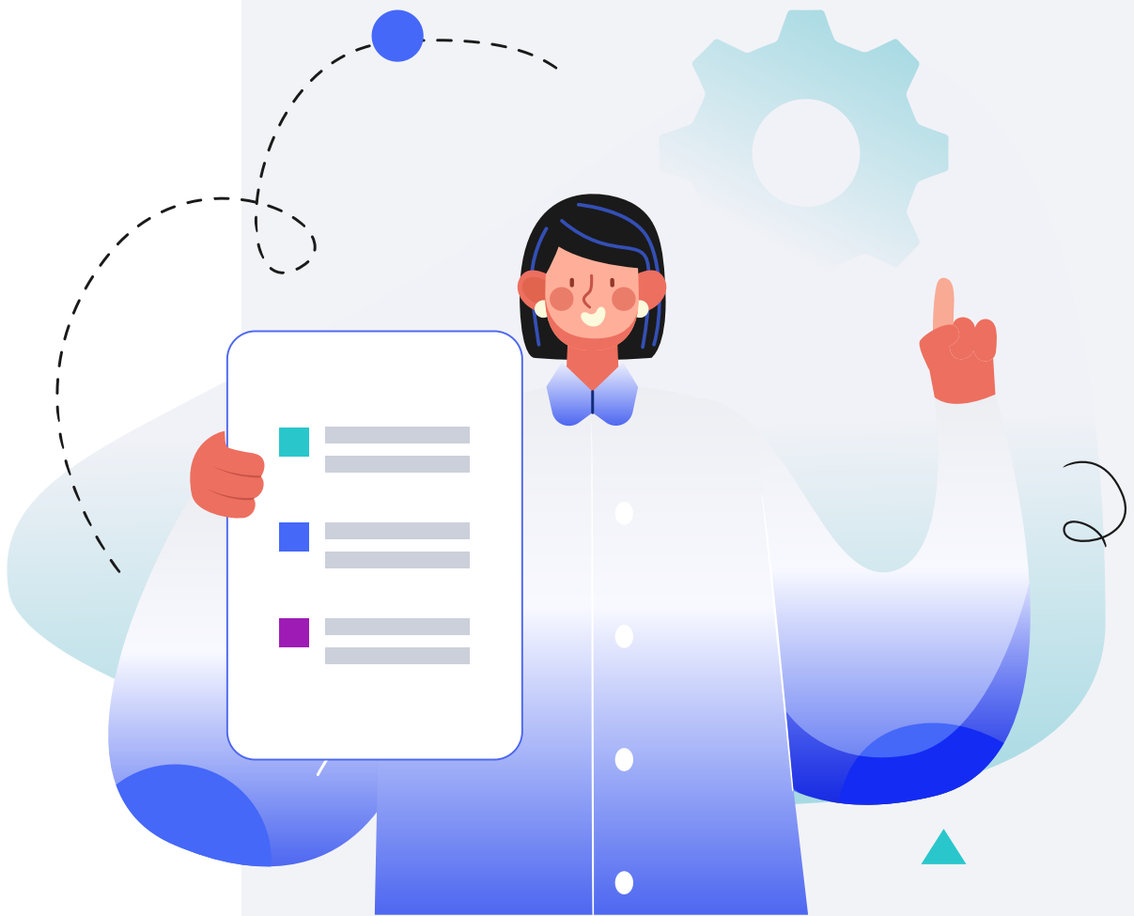
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

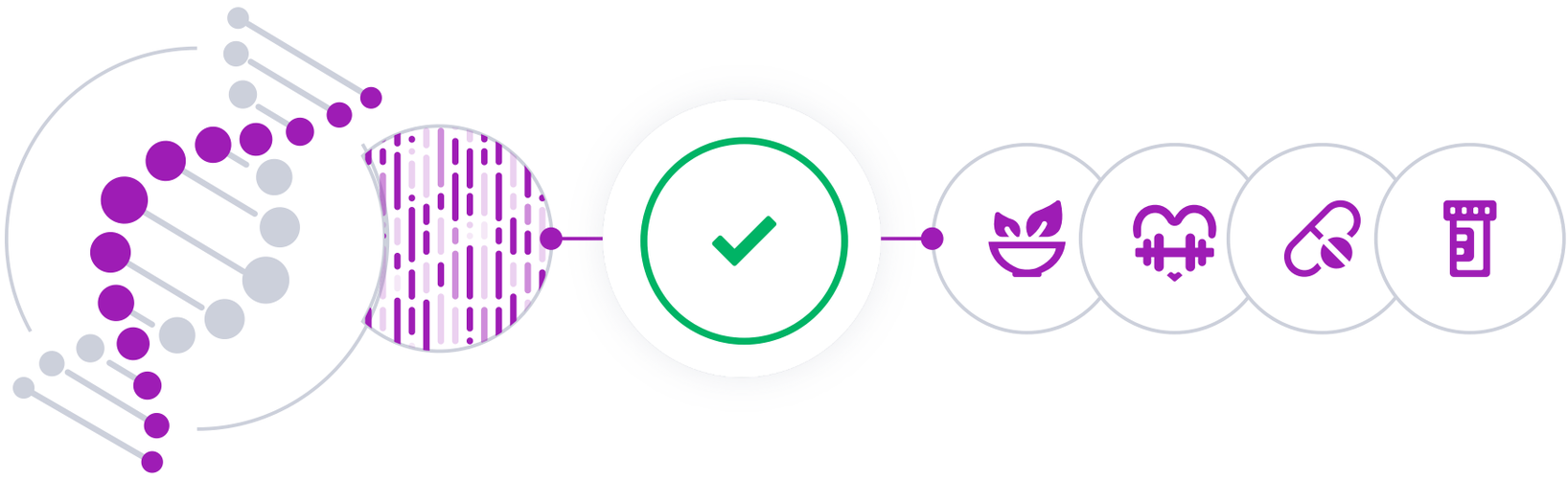


DISCLAIMER

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

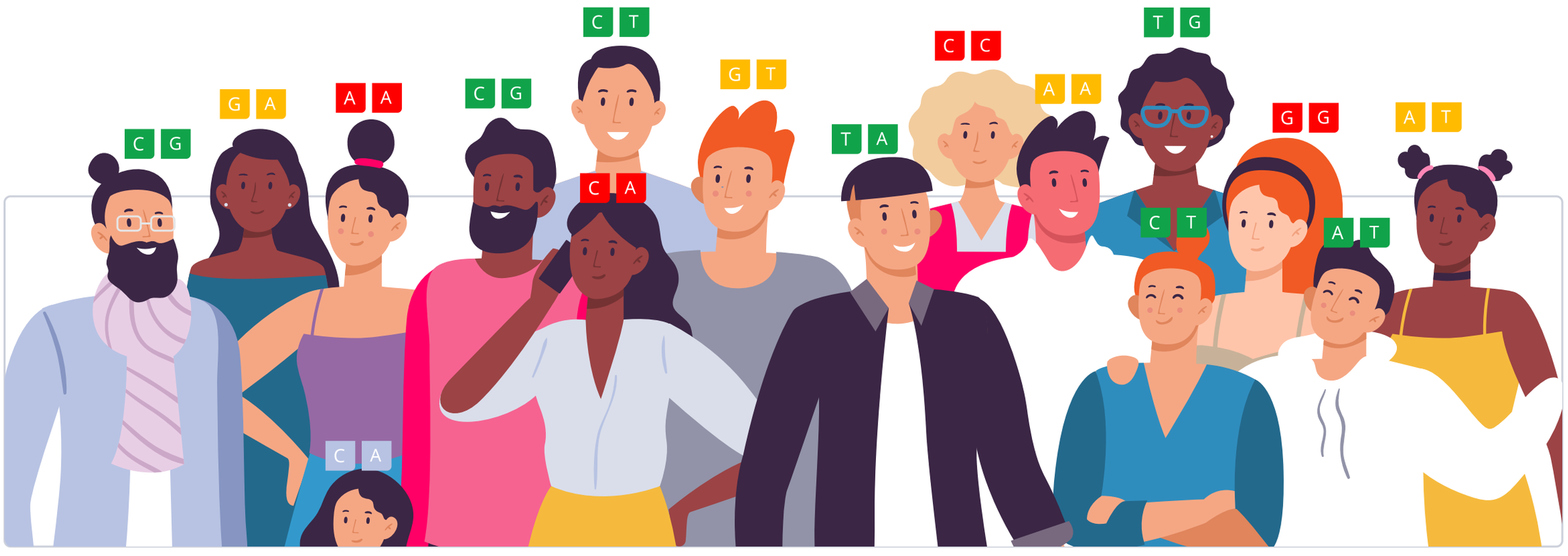
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

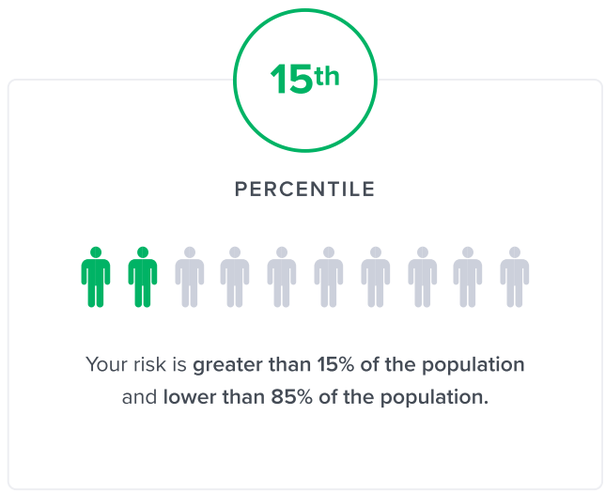
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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.

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

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



Genotype color info: AA You don't have any risk alleles | AA You have 1 risk allele | AA You have 2 risk alleles

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

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

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

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

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

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

Impact

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

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

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

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

Recommendation Evidence

5 / 5

Recommendations that are considered effective and generally recommended by experts and medical bodies.

4 / 5

Recommendations that are considered likely effective and that have multiple independent meta-analyses and a great many studies supporting them.

3 / 5

Recommendations that are considered possibly effective and have many studies supporting them

2 / 5

Recommendations that have insufficient evidence, with two or several clinical trials supporting them, or many studies but with ambiguous results.

1 / 5

Recommendations that have insufficient evidence, with a single clinical trial, or with many studies most of which didn't find support for the recommendation.

0 / 5

No evidence in humans.

Genotype-specific Evidence

High-quality

Direct evidence that a recommendation helps more in people with your gene variant (many clinical trials, afew 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

Cadmium is a heavy metal. It is naturally found in the environment [R].

Cadmium exposure can increase oxidative stress and damage many organs. This can contribute to [R]:

- Breathing problems
- Kidney damage
- Weak bones and bone pain
- Cancer

Genetics of Cadmium Levels

Some people may be predisposed to higher levels of cadmium than others, in part due to genetic factors. This may put them at a higher risk of toxicity from cadmium exposure [R].

The genes involved may influence cadmium absorption and metabolism [R].

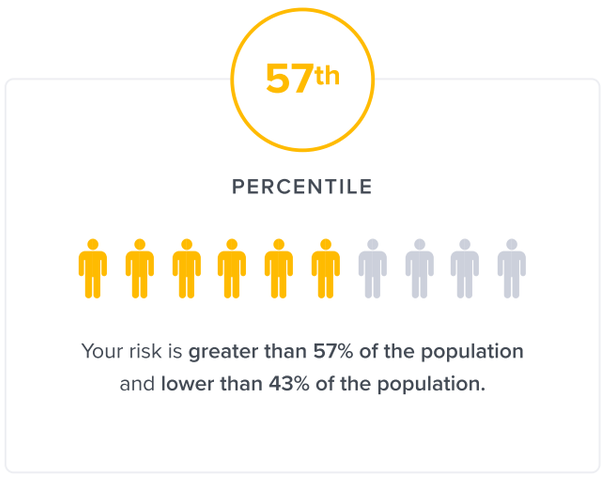
Interestingly, the effect of genetics on cadmium levels may be stronger in people who don't smoke. Cigarettes are a major source of cadmium, so they may mask subtle genetic differences [R].

Other factors such as diet and the environment may also influence your cadmium levels. The only reliable way to determine your cadmium levels is to get tested. Blood tests, urine tests, and more can be used to determine your cadmium levels. [R].

If your cadmium levels are high, your doctor may recommend chelation therapy. This is a form of treatment that binds heavy metals and helps remove them from the body [R, R].

TYPICAL LEVELS

Predisposed to typical levels of cadmium based on 9 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
/	rs12228069	GG
MLLT3	rs76878079	GG
THBS1	rs166722	AA
PUM3	rs10813093	TC
USP24	rs396511	CC
WDR72	rs79052248	AA
HRH4	rs17204045	GG
HRH4	rs880423	TT

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	Avoid Cadmium Exposure	
2	Dietary Selenium	
3	Modified Citrus Pectin	15 g
4	Methylsulfonylmethane (MSM)	1 g
5	Calcium Supplements	1000 mg
6	Dietary Iron	10 mg
7	Air Purifier	
8	N-acetylcysteine (NAC)	1200 mg
9	L-Threonine	500 mg
10	Zinc	10 mg
11	Alpha-Lipoic Acid	600 mg
12	Magnesium	250 mg
13	Sweating More	30 minutes
14	Vitamin C	2000 mg

1

Avoid Cadmium Exposure

IMPACT 5 / 5

EVIDENCE 5 / 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

You can be exposed to cadmium by:

- Smoking cigarettes [R, R, R, R]
- Eating foods that contain cadmium [R, R, R]
- Working with material that contains cadmium (e.g., some alloys, pigments, and batteries) [R, R]

Some useful tips to help reduce your exposure to cadmium include [R, R]

- Giving up smoking and avoiding secondhand smoke
- Wearing protective equipment if your job or hobbies involve handling cadmium
- Avoiding foods grown in contaminated soils as much as possible
- Ensuring an adequate intake of iron and zinc to reduce cadmium absorption

2

Dietary Selenium

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate selenium-rich foods into your daily diet, such as Brazil nuts, seafood, and organ meats. Eating 1-2 Brazil nuts a day can meet the daily selenium requirement for most adults.

Description

Selenium is a trace mineral found in various foods, including nuts, seeds, and seafood. It is an essential nutrient that plays a crucial role in maintaining the body's antioxidant defenses and supporting thyroid function.

Selenium supports [R]:

- Reproduction
- Thyroid function
- DNA production
- Immune response

Adults should be getting **55 micrograms** of selenium per day. Good sources of selenium include [R]:

- Brazil nuts
- Fish
- Meat
- Eggs
- Rice
- Oatmeal

How it helps

In a cross-sectional study of 1833 participants, blood lead and cadmium negatively affected cognitive performance and blood selenium showed a positive association, particularly in men. Selenium may thus decrease the negative impact of heavy metal combinations on cognitive function [R].

Dietary selenium can bind with cadmium in the body, forming an inert mass that the body can then safely eliminate.

3

Modified Citrus Pectin

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Take 5 grams of modified citrus pectin in powder form, mixed with water or juice, three times per day away from meals.

TYPICAL STARTING DOSE

15 g

Description

Modified citrus pectin is a fruit fiber processed to improve absorption from the digestive system into the bloodstream. It can help protect against some chronic conditions and has benefits for heart health. Additionally, it may help remove toxic heavy metals from your body to promote good overall health.

How it helps

In a non-placebo-controlled trial of 8 healthy volunteers, ingesting modified citrus pectin (15 g/day for 5 days and 20 g on day 6) increased urinary cadmium excretion by 150% at day 6 [R].

Modified citrus pectin binds with cadmium in the body making it easier for your body to remove it.

4

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

1 g

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

Cadmium is a heavy metal that poses significant health risks, and MSM can assist in reducing cadmium toxicity through several mechanisms:

1. **Chelation of Heavy Metals**: MSM has the potential to act as a chelating agent, binding to cadmium ions and facilitating their removal from the body. This reduces the overall cadmium burden and its toxic effects on tissues.
2. **Protection Against Oxidative Stress**: Cadmium exposure induces oxidative stress, leading to cellular damage. MSM, with its antioxidant properties, can neutralize free radicals and reduce oxidative damage, thereby protecting cells from the harmful effects of cadmium.
3. **Support of Cellular Repair Mechanisms**: MSM promotes the repair and regeneration of damaged tissues. In the context of cadmium toxicity, this can be particularly beneficial as it aids in the recovery of organs and tissues affected by cadmium-induced damage.

In summary, MSM can aid in mitigating the toxic effects of both arsenic and cadmium through its antioxidant, anti-inflammatory, and detoxification-supportive properties.

5

Calcium Supplements

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 500-600 mg of calcium supplement twice daily with food. For best absorption, do not exceed 600 mg at one time and ensure a total daily intake of 1000-1200 mg from all sources, including diet. Continue indefinitely for ongoing support of bone health.

TYPICAL STARTING DOSE

1000 mg

Description

Calcium supplements are commonly used to support bone health and prevent conditions like osteoporosis. Adequate calcium intake is essential for maintaining strong bones and teeth.

Calcium is the most abundant mineral in the human body. It is vital for the bones, heart, muscles, and nervous system [R].

Your body gets calcium from food and needs vitamin D to help absorb it. Calcium can be found in a variety of foods, including [R]:

- Dairy products
- Green, leafy vegetables
- Fish with edible soft bones (e.g., sardines)
- Calcium-fortified foods and beverages

How it helps

Adequate calcium intake can decrease the absorption of cadmium in the intestines.

6

Dietary Iron

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate iron-rich foods into your daily meals, such as red meat, chicken, turkey, fish, beans, lentils, tofu, cooked spinach, and fortified cereals. Aim for at least 18 mg of iron per day for adult women and 8 mg per day for adult men. It's also beneficial to pair these foods with vitamin C-rich foods like oranges, strawberries, or bell peppers to enhance iron absorption.

TYPICAL STARTING DOSE

10 mg

Description

Iron (Fe) is an essential mineral. It helps make hemoglobin, a protein that carries oxygen to cells. In this way, iron **increases energy** and supports **brain and immune system function** [R, R, R].

Foods rich in iron include [R]:

- Oysters
- White beans
- Beef
- Chocolate
- Spinach
- Fortified cereals

Women should be getting **8-18 mg** of iron per day, while **men** should be getting **8 mg** [R].

Groups at risk of iron deficiency include [R]:

- Menstruating women
- Children
- Vegetarians
- Routine blood donors

How it helps

Iron supplementation can help limit the absorption of cadmium in the body by competing with it for binding sites in the digestive system. This reduces the amount of cadmium that enters the bloodstream, limiting its potential harmful effects.

7

Air Purifier

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Install an air purifier in your home, ideally in the rooms you spend the most time in, such as your bedroom and living room. Keep the air purifier on for at least 12 hours each day, or continuously if possible, to effectively reduce airborne contaminants. Regularly clean or replace the filters according to the manufacturer's instructions to maintain its efficiency.

Description

Air purification is the process of cleaning the air around us. Using a high-quality air purifier with a HEPA filter helps remove harmful particles like dust, smoke, and bacteria. Having clean air to breathe can help boost your health by reducing allergies, asthma problems, and even certain infections.

How it helps

Air purification can help reduce the levels of airborne cadmium, especially in environments with contaminated dust or smoke, thus potentially reducing inhalation exposure.

8

N-acetylcysteine (NAC)

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 600 mg of N-Acetylcysteine (NAC) supplement daily with water. It can be taken at any time of the day, but try to take it at the same time each day for best results.

TYPICAL STARTING DOSE

1200 mg

Description

NAC is a supplement that contains a form of the amino acid cysteine, a protein building block that your body uses to make the antioxidant glutathione. It is used for its potential antioxidant properties and its ability to support lung, gut, and mental health.

N-acetylcysteine (NAC) is converted to cysteine in the body. Cysteine is a protein building block (amino acid) that helps make the antioxidant glutathione [R].

People take NAC to potentially support [R, R]:

- Mental health
- Ovarian health and pregnancy outcomes
- Lung health
- Gut health

How it helps

NAC reduced oxidative damage caused by cadmium in animal studies [R, R, R, R].

NAC may help by contributing to the production of the master antioxidant glutathione [R].

9

L-Threonine

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 500 mg to 3 grams of L-threonine supplement daily, with water, preferably with meals to improve absorption. The exact dosage depends on individual health conditions and goals. Consult with a healthcare provider for personalized advice. This regimen can be followed indefinitely as part of a balanced diet to support overall health.

TYPICAL STARTING DOSE

500 mg

Description

L-threonine is an essential amino acid that is important for the production of proteins and neurotransmitters. It may also help to improve cognitive function, reduce stress, and protect against heart disease.

How it helps

Supplementation with threonine may boost cadmium elimination, according to one animal study. Threonine may help by increasing the presence of beneficial *Escherichia-Shigella* bacteria in the gut, which in turn, helps reduce the levels of cadmium in critical organs like the liver, kidney, and intestines while increasing its expulsion in feces [R].

10

Zinc

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take a 15 mg zinc supplement daily, ideally with a meal to enhance absorption.

TYPICAL STARTING DOSE

10 mg

Description

Zinc is an essential mineral found in various foods, including meat, dairy, and nuts. It is crucial for immune function, wound healing, DNA synthesis, and maintaining healthy skin and nails. Zinc supplements are sometimes used to support immune health and manage zinc deficiencies.

Zinc is an essential mineral. Your body needs it to [R, R]:

- Defend against disease
- Protect DNA from damage
- Heal wounds
- Control blood sugar

Some of the best sources of zinc include **shellfish, pork, beef, and beans**. It is also available as a supplement [R].

Adults should get **8-11 mg of zinc** per day [R].

How it helps

Multiple animal studies show that zinc can interfere with the harmful effects of cadmium. This may be because both metals compete for the same transporters for their uptake [R]

11

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 has antioxidant properties and could assist in reducing oxidative stress caused by heavy metals.

Studies have shown that ALA can regenerate other antioxidants like glutathione, which helps protect cells from damage. For instance, ALA activates the Nrf2 signaling pathway, which boosts the production of enzymes necessary for glutathione synthesis, thereby reducing cadmium-induced cell death in liver cells [R, R].

ALA may also restore antioxidant levels and reduce oxidative stress in the brain and kidneys of animals exposed to cadmium [R, R].

However, there are no clinical trials to confirm these benefits.

12

Magnesium

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take up to 350 mg of magnesium daily as a supplement, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

250 mg

Description

Magnesium is an essential mineral involved in various bodily functions, including muscle contractions, nerve signaling, and bone health. Maintaining adequate magnesium levels through diet or supplements can support overall well-being and reduce the risk of magnesium deficiency-related health issues.

Magnesium is an essential mineral. Your body needs it for [R, R, R]:

- Muscle, nerve, and bone function
- Blood sugar and blood pressure control
- DNA and protein production
- Strong immunity

Women need **310-320 mg** of magnesium per day, while men need **400-420 mg** [R].

Foods rich in magnesium include **nuts, seeds, and leafy greens**. Magnesium is also available as a supplement [R].

How it helps

Magnesium can bind with cadmium and form a compound that reduces the absorption of cadmium in the body, therefore lessening its toxic effects. In addition, magnesium promotes the release of cadmium through urination, aiding its removal from the body.

13

Sweating More

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Incorporate at least 30 minutes of moderate-intensity exercise, such as brisk walking, cycling, or swimming, into your daily routine to induce sweating. Ensure to stay hydrated by drinking water before, during, and after exercise. Aim for most days of the week for consistent benefits.

TYPICAL STARTING DOSE

30 minutes

Description

Sweating more through physical activity or heat exposure helps regulate body temperature, eliminate toxins, and support cardiovascular health by improving blood flow and reducing the risk of heat-related illnesses.

How it helps

Sweating more aids in the removal of harmful substances, including heavy metals like cadmium, from the body via sweat. Hence, increased sweating could potentially reduce cadmium levels and lessen its toxic effects.

14

Vitamin C

IMPACT 0 / 5

EVIDENCE 0 / 5

How to implement

Take 500-2000 mg of vitamin C supplement daily. It can be taken at any time of the day, with or without food, according to personal preference or tolerance.

TYPICAL STARTING DOSE

2000 mg

Description

Vitamin C is an essential nutrient. This means that our bodies can't produce it on their own, so we have to get it from food or supplements [R].

Foods rich in Vitamin C include: [R]

- Citrus Fruits
- Peppers
- Brussel sprouts
- Kiwi
- Broccoli
- Tomato
- Cantaloupe
- Cauliflower
- Spinach

Vitamin C has antioxidant properties. It supports immunity, heart health, and wound healing [R, R].

Vitamin C deficiency is called *scurvy.* In the past, many sailors suffered from it [R].

How it helps

Vitamin C may decrease cadmium absorption more in people with certain gene variants [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.