

Aluminum

Biohacker Report

REPORT CATEGORY —



Sample Client

Report date: 15 January 2026

Table of Contents

03 How this works

- 04 Impact
- 05 Evidence
- 06 Some things to keep in mind

07 Introduction

08 Your genetics

09 Your recommendations

20 Next Steps

- 20 Your Lab Results

DISCLAIMER

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

Personal information

NAME

Sample Client

SEX AT BIRTH

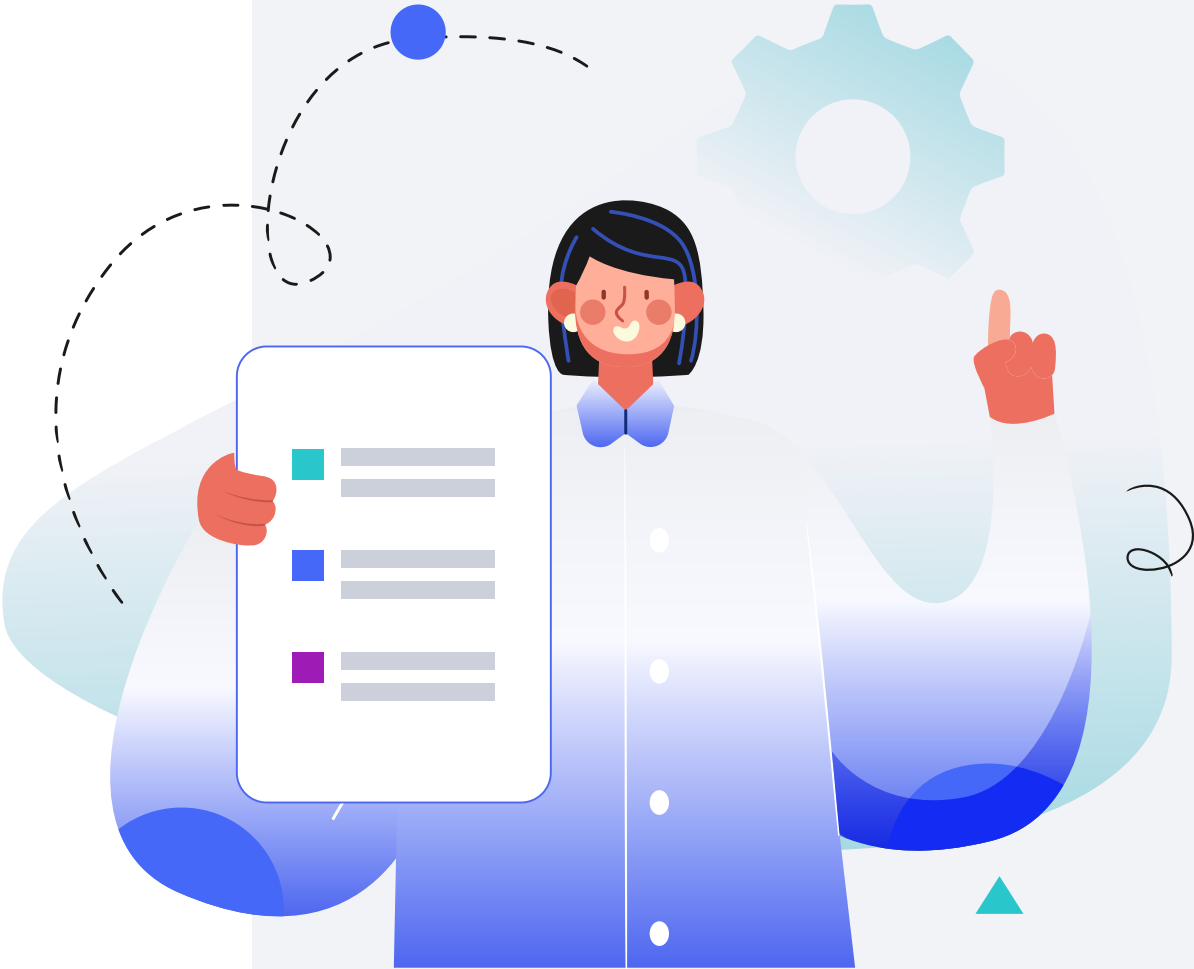
Male

HEIGHT

5ft 5" 165cm

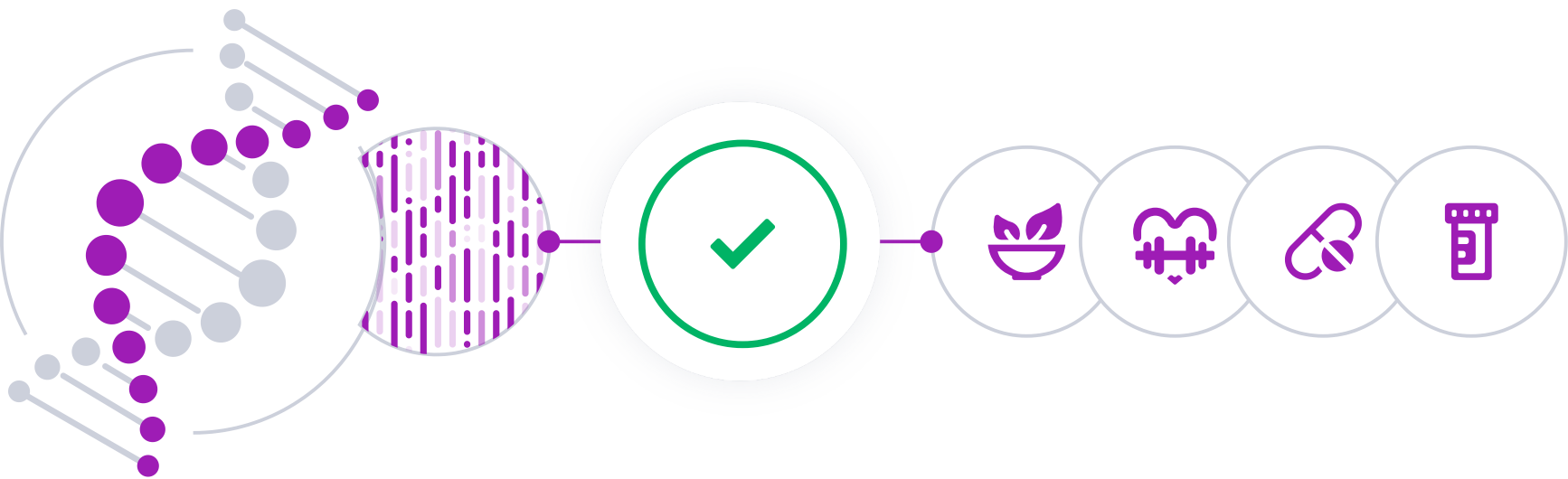
WEIGHT

137lb 62kg



How this works

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

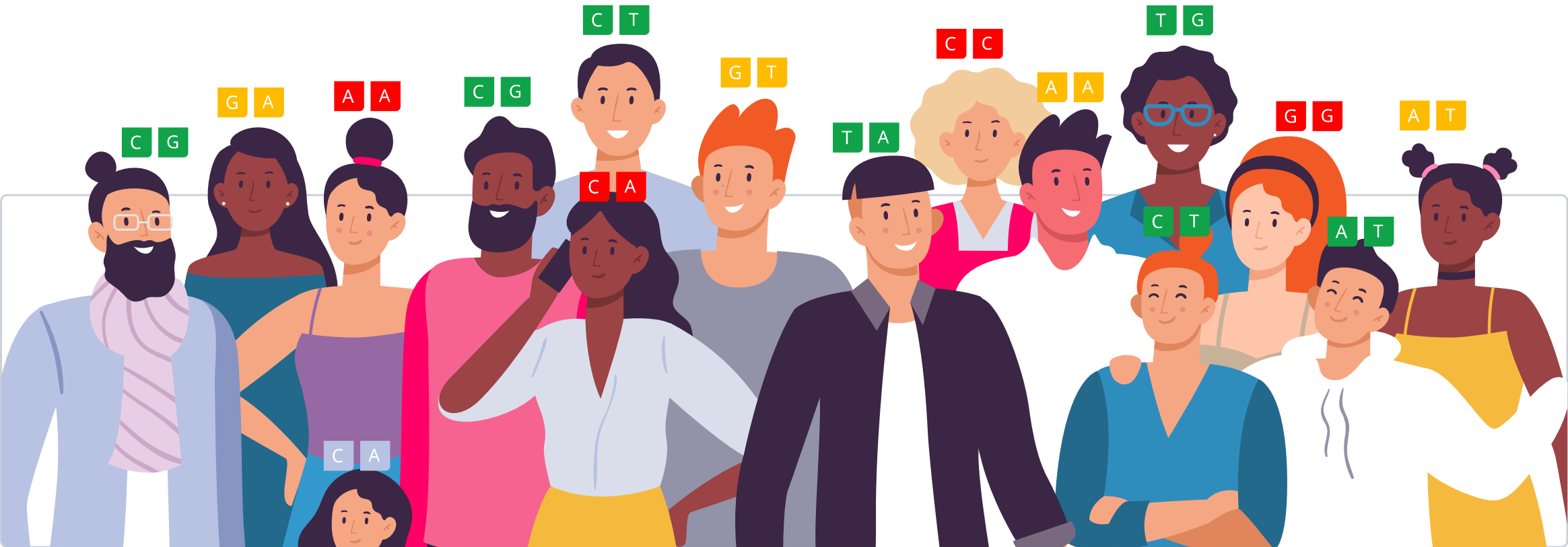


Similarly, our Trait Reports look at how your DNA influences your traits.



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

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



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

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

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



Genotype color info:

AA

You don't have any risk alleles

AA

You have 1 risk allele

AA

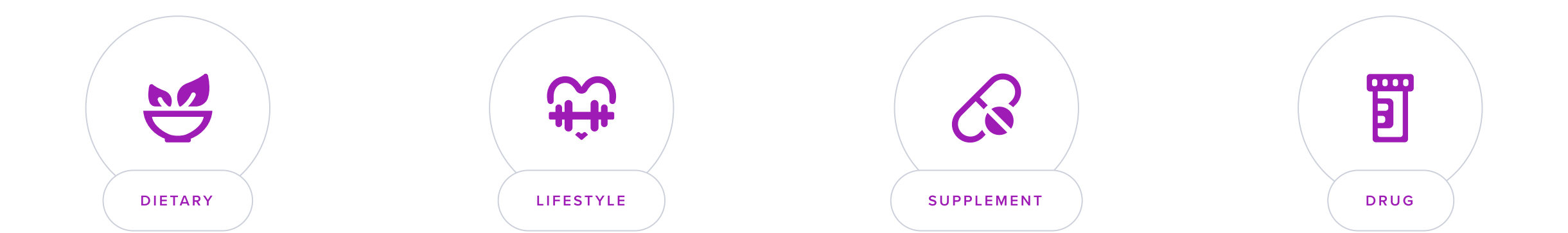
You have 2 risk alleles

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

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

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

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



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

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



Impact

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

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

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

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

Recommendation Evidence

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

Genotype-specific Evidence

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

Some things to keep in mind:

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

Introduction

Aluminum is the third most abundant element in the Earth's crust and a commonly used metal in various industries and consumer products. It's found in kitchen utensils, cans, foil, and many other items. While aluminum is generally considered safe, concerns arise regarding its exposure and potential health effects, especially when it comes to high levels of aluminum intake or exposure.

Sources of exposure to aluminum include:

- Food and water: Aluminum can be present in some foods, water supplies, and food additives. Aluminum compounds are also used in some food packaging and cooking utensils.
- Cosmetics and personal care products: Some deodorants, antiperspirants, and cosmetics contain aluminum.
- Medications: Certain over-the-counter and prescription medications, such as antacids, can contain aluminum.
- Occupational exposure: Workers in industries that process aluminum or use aluminum powders are at higher risk of exposure.

Regulatory agencies have set limits on the amount of aluminum allowed in various products, including food additives and water, to ensure safety. For most people, everyday exposure to aluminum is not a significant health risk.

However, for individuals with specific health concerns, such as kidney disease, or for those who wish to minimize their aluminum exposure, consulting with a healthcare provider or a nutritionist can provide personalized advice and strategies.

Health concerns associated with aluminum exposure include:

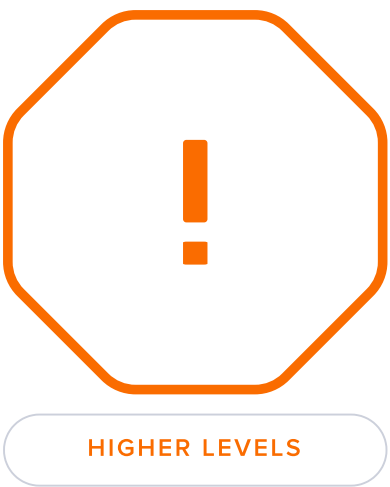
- Bone health: Excessive aluminum exposure can affect bone health, potentially leading to bone disorders due to aluminum's interference with calcium absorption.
- Kidney function: In individuals with impaired kidney function, high levels of aluminum accumulation can be harmful, as the kidneys are responsible for eliminating its excess.
- Neurological effects: There has been some concern about aluminum's potential link to neurodegenerative diseases, including Alzheimer's disease. However, the current scientific consensus is that everyday exposure to aluminum is not a significant risk factor.

Genetics of Aluminum Levels

A study of over 2000 Chinese individuals identified several variants associated with blood levels of aluminum and other minerals [\[R\]](#).

Some strategies to reduce exposure to aluminum include:

- Opting for stainless steel or glass cookware and avoiding cooking acidic foods in aluminum pans, as they can cause more aluminum to leach.
- Limiting the intake of foods and additives that contain aluminum.
- Choosing aluminum-free deodorants and cosmetics if concerned about exposure.
- Consulting with a healthcare provider about alternatives to aluminum-containing medications, especially antacids.



Predisposed to higher aluminum levels based on 12,017 genetic variants we looked at



Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
EFR3A	rs72728663	CC
/	rs369179362	CC
TTF2	rs1289661	TT
GK2	rs62297754	TT
IL11RA	rs10814173	TG
DAPK1	rs4878080	GA
AP2B1	rs149814693	GG
EPHA4	rs146559885	TT
OSBPL11	rs4574233	CC
KCNJ6	rs2835950	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		DOSAGE			
1	N-acetylcysteine (NAC)	1200 mg	2	Selenium Supplements	50 mcg
3	Dietary Polyphenols		4	Avoid Aluminum Exposure	
5	Magnesium	350 mg	6	Green Tea	400 mg
7	Zinc	15 mg	8	Vitamin C	2000 mg
9	Vitamin E	200 iu	10	Dietary Antioxidants	

1



N-acetylcysteine (NAC)

IMPACT2 / 5

EVIDENCE1 / 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

A systematic review of 4 trials and 177 patients concluded that intravenous NAC reduces mortality of severe aluminum phosphide poisoning [\[R\]](#).

NAC also reduced aluminum toxicity in animal studies [\[R\]](#), [\[R\]](#), [\[R\]](#).

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

2



Selenium Supplements

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 50 mcg of selenium supplements once daily, preferably with a meal to enhance absorption.

TYPICAL STARTING DOSE

50 mcg

Description

Selenium is a trace mineral found in Brazil nuts and many other foods as well as supplements. 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. Selenium supplements are available for people who can't meet their needs with a balanced diet [\[R\]](#).

How it helps

Selenium has antioxidant properties that can help reduce oxidative damage caused by aluminum in the body.

3



Dietary Polyphenols

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Incorporate foods rich in dietary polyphenols into your daily diet. This can include consuming a variety of fruits like berries, apples, and grapes; vegetables such as onions and broccoli; nuts and seeds; as well as beverages like green tea and coffee. Aim for at least five servings of fruits and vegetables per day to achieve a beneficial intake of polyphenols.

Description

Polyphenols are antioxidants found in foods like fruits, vegetables, and tea, which may offer various health benefits, including reduced inflammation and improved heart health.

Polyphenols are plant components with antioxidant properties. They help reduce [oxidative stress](#) [R].

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

- High blood sugar
- Type 2 diabetes
- Heart disease

You can get most polyphenols and other antioxidants from fresh fruits and vegetables [R, R].

How it helps

Polyphenols are antioxidant compounds found in various foods that can help reduce oxidative stress and inflammation caused by aluminum.

4



Avoid Aluminum Exposure

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Use aluminum-free deodorants and avoid cooking or storing food in aluminum foil or aluminum cookware. Instead, opt for glass, stainless steel, or ceramic options for cooking and storing food. Check labels on over-the-counter medications, such as antacids, for aluminum compounds and choose aluminum-free alternatives. Aim to do this consistently for the long term to effectively minimize your aluminum exposure.

Description

Aluminum is a common metal used in manufacturing and food containers. Humans accidentally consume trace amounts of it on a daily basis. High levels can be found in the environment, certain workplaces (e.g., transportation industries), deodorants, and contaminated foods. Exposure to high levels of aluminum can potentially lead to aluminum toxicity.

Aluminum is a lightweight metal. It is **the most abundant metal in the Earth's crust** and is naturally found in the environment. It is usually used for food preservation, cans, cookware, and cars [\[R\]](#).

Aluminum-containing products are major sources of aluminum exposure including [\[R\]](#):

- Antacids (heartburn drugs)
- Food additives
- Cosmetics (e.g., antiperspirants, makeup foundations, toothpaste)

Excessive aluminum exposure may increase [oxidative stress](#) and contribute to various health issues, such as [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#), [\[R\]](#):

- Neurological disorders
- Cognitive problems
- Bone disorders
- Breast cancer

How it helps

Avoiding aluminum exposure can help prevent aluminum from entering the body, which can reduce the risk of neurotoxicity and other negative health effects associated with high levels of aluminum.

5



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

350 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 help reduce aluminum absorption in the body. It competes with aluminum for absorption in the intestines, thus reducing the amount of aluminum that enters the bloodstream.

6



Green Tea

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Consume 400 mg of green tea extract daily. This can be taken in the form of capsules or tablets available that specify the amount of green tea extract. Ensure the supplement is taken according to the product's specific instructions, usually once a day with water.

TYPICAL STARTING DOSE

400 mg

Description

Tea is a beverage made by steeping the leaves of the *Camellia sinensis* plant in hot water. It comes in various types, including black, green, white, and herbal teas, and is known for its diverse flavors and potential health benefits due to antioxidants and other bioactive compounds.

[Green](#) and black tea are made from the same plant (*Camellia sinensis*). This plant is processed in different ways to make each type of tea [\[R, R\]](#).

Tea contains antioxidants called **flavonoids**, which may help prevent [\[R, R, R, R\]](#):

- Heart disease
- Cancer
- Diabetes

How it helps

Green Tea is rich in antioxidants, including catechins, which help reduce oxidative stress and protect against damage from toxic metals like aluminum.

7



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

15 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

Zinc competes with aluminum for absorption and can limit the amount of aluminum the body absorbs, reducing its toxic effects.

8



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 can chelate aluminum, helping to remove the metal from the body and reduce its toxic effects.

9



Vitamin E

IMPACT

0 / 5

EVIDENCE

0 / 5

How to implement

Take 200 IU of Vitamin E daily as a supplement, preferably with a meal that contains fat to enhance absorption.

TYPICAL STARTING DOSE

200 iu

Description

Vitamin E is a fat-soluble antioxidant found in various foods, such as nuts and seeds. It is known for its ability to protect cells from oxidative damage, support immune function, and may play a role in skin health. Vitamin E supplements are used to bolster antioxidant defenses and may be beneficial for conditions related to oxidative stress.

[Vitamin E](#) is an antioxidant important for the immune system and for heart health [\[R\]](#).

Plant-based foods have the most vitamin E. These include [\[R\]](#):

- Wheat germ
- Sunflower seeds
- Almonds
- Plant oils

Adults need about **15 mg** of vitamin E per day [\[R\]](#).

How it helps

Vitamin E has antioxidant properties that can help reduce oxidative stress caused by aluminum exposure, protecting cells and tissues from damage.

10



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

Dietary antioxidants can help counteract oxidative stress caused by aluminum exposure, protecting cells from damage.

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.

