SelfDecode™

Manganese

Biohacker Report

REPORT CATEGORY

NUTRITION

Sample Client

Report date: 15 January 2026

Powered by omicsedge

Table of Contents

Personal information

NAME

Sample Client

SEX AT BIRTH

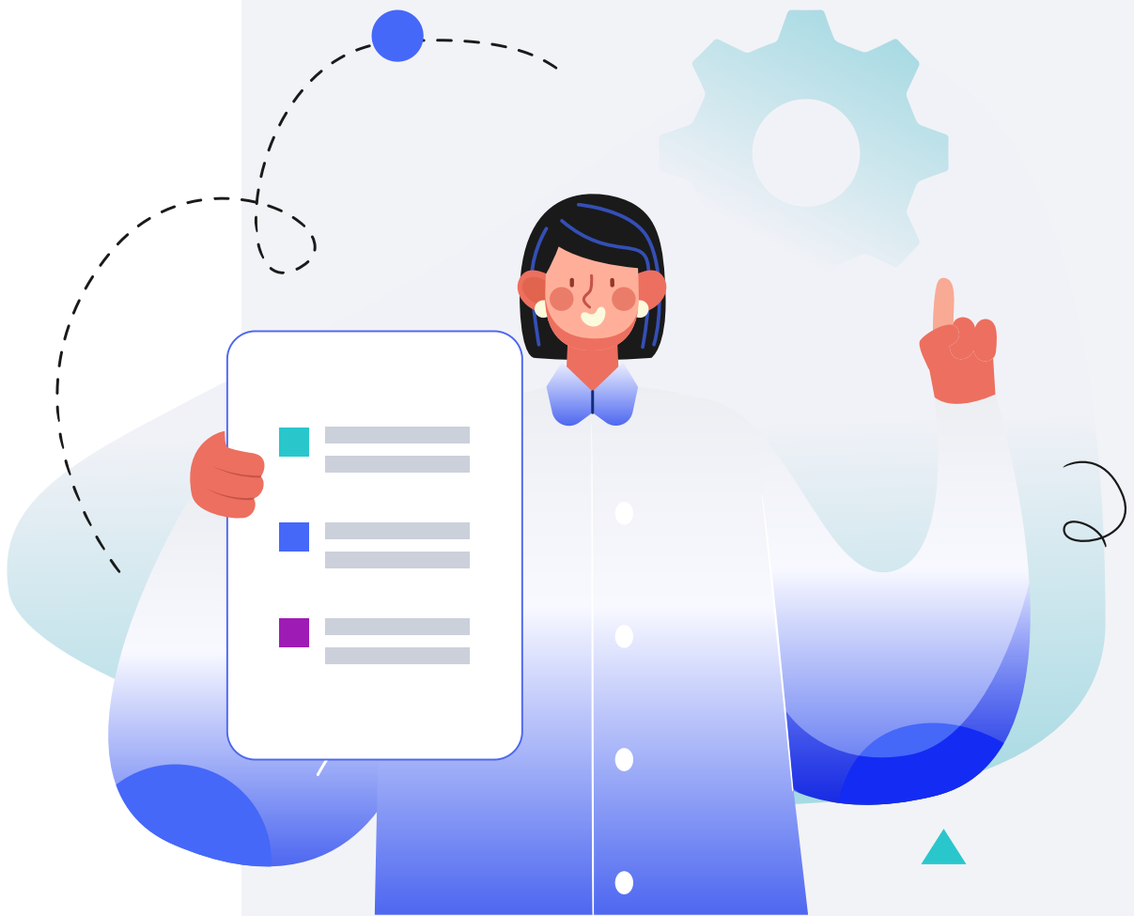
Male

HEIGHT

5ft 5" 165cm

WEIGHT

137lb 62kg

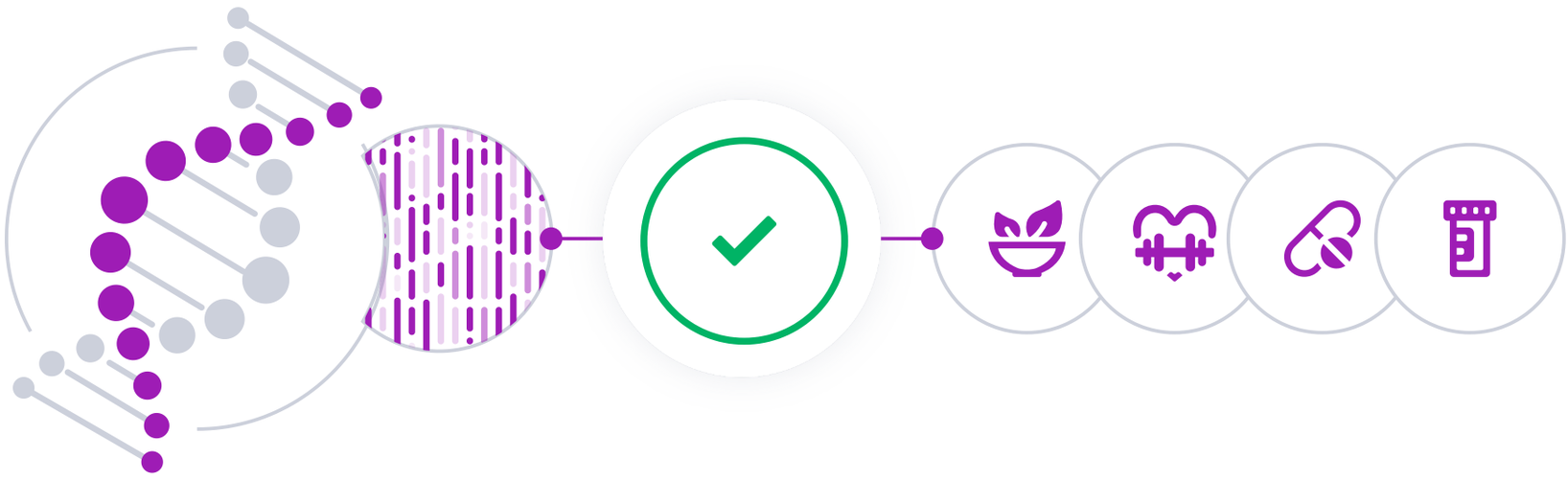


DISCLAIMER

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

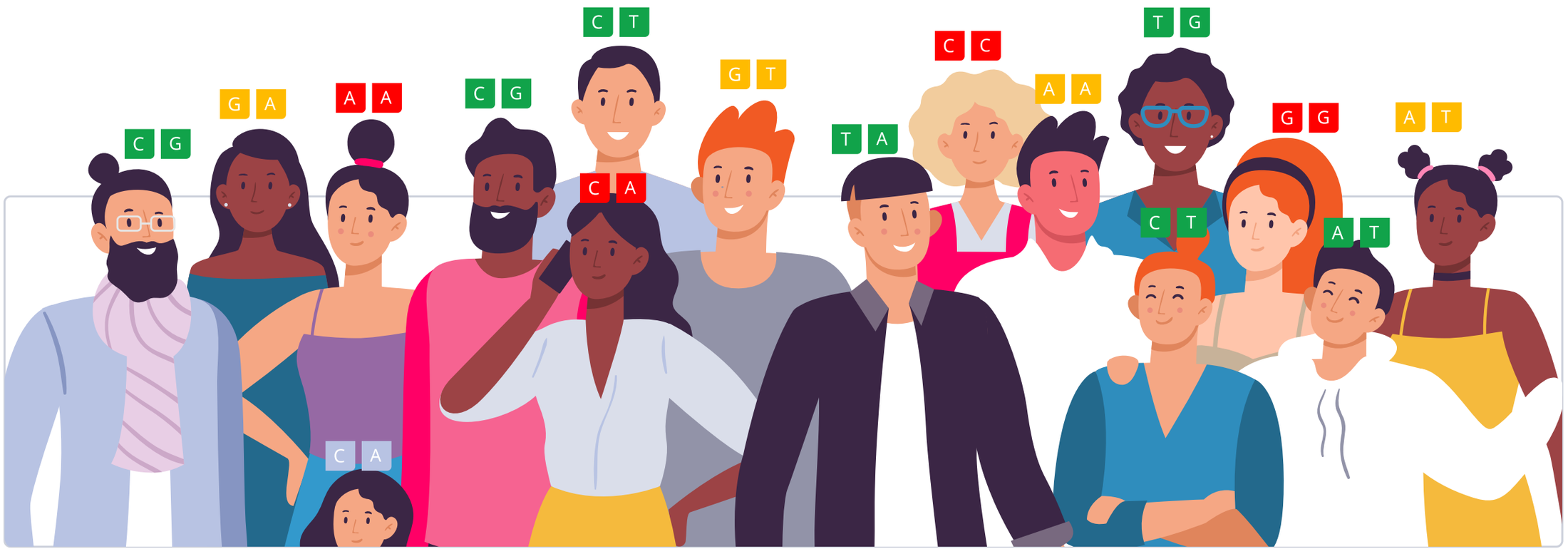
Our Wellness Reports analyze how your DNA influences your health.
We then use this analysis to give you personalized risk estimates and recommendations.



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.

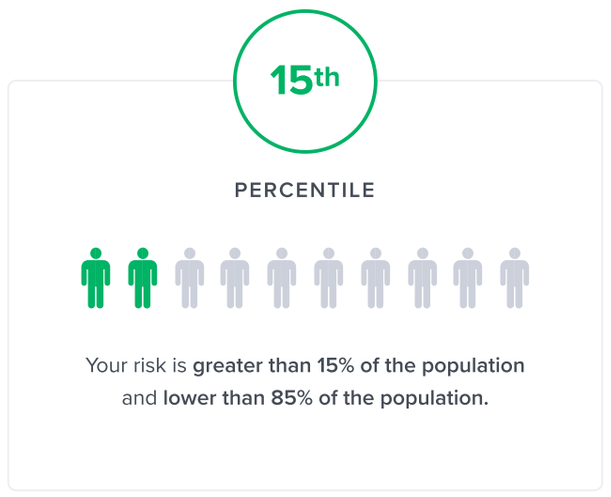
Genetic variants are parts of DNA that differ from person to person. Some can make you more vulnerable to certain health issues, while others may influence traits such as eye color.



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.



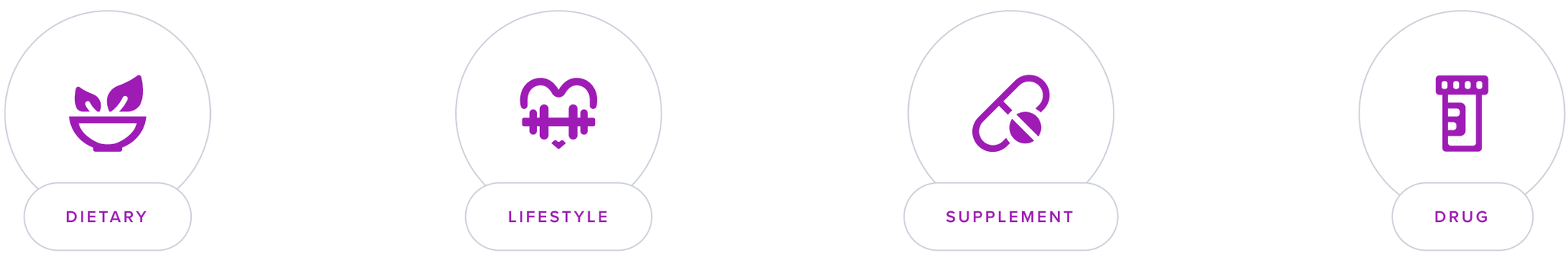
Genotype color info: AA You don't have any risk alleles | AA You have 1 risk allele | AA You have 2 risk alleles

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

Manganese (Mn) is an essential trace mineral, which means we need it in very small amounts [R].

It supports the function of different enzymes that play a role in [R, R, R, R]:

- Energy production
- Antioxidant defense
- Metabolism
- Brain development and function
- Immune response

Adults need around **2 mg** of manganese per day. We get most of it from foods such as legumes, rice, nuts, and whole grains [R].

People are more likely to have excess manganese than to be deficient. For this reason, **we recommend getting this mineral from food only**. The safe upper limit for manganese intake is **11 mg** per day [R, R].

Occupational exposure to manganese is a potential concern for [R, R, R, R]:

- Miners
- Welders
- Battery manufacturers
- Mechanics
- People dealing with pesticides

Manganese toxicity damages the nerves. In some cases, it can result in *manganism*, which has symptoms similar to Parkinson's disease [R].

Genetics of Manganese Levels

Genetics can partly determine your manganese levels. Responsible genes play a role in [R, R]:

- Manganese and zinc transport
- Manganese uptake from the blood into tissues
- Iron and manganese exchange

Rare mutations in the *SLC39A8* gene can cause severe manganese deficiency. **However, those mutations result in serious medical conditions that only doctors can diagnose and treat. This report doesn't look into such mutations** [R, R].

Keep in mind that your diet and environment also influence your manganese levels.

TYPICAL NEED

Likely typical need for manganese based on 98,113 genetic variants we looked at

Your top variants that most likely impact your genetic predisposition:

GENE	SNP	GENOTYPE
TLE3	rs76190416	CC
GYPE	rs114415743	TT
TIAL1	rs151243716	GG
KLHL26	rs144714782	GG
INPP5F	rs137997938	GG
TTF2	rs1289661	TT
GABRG3	rs891795	GG
MAF	rs12921341	TT
AKAP12	rs2786750	CT
OPCML	rs2155533	GA
RFC3	rs61945916	CC
SLC39A8	rs13107325	CC
CSMD1	rs190803682	CC
LHFPL3	rs7796437	AA
BARX2	rs75249873	AA
CLDN10	rs149628902	TT
SMOC1	rs227446	GG
PID1	rs13006279	AA
ADCY9	rs2018513	AA
/	rs4239354	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.

1. Oysters
2. Spinach
3. Chickpeas
4. Leafy Green Vegetables
5. Legumes
6. Mussels
7. Whole Grains
8. Blackberries
9. Hazelnuts
10. Soy
11. Lentils
12. Oats
13. Brown rice
14. Sweet Potatoes
15. Clams
16. Pecans
17. Brussels Sprouts
18. Coconut

1

Oysters

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Consume 3-5 medium-sized oysters, which are about 50-100 grams, two to three times a week. This ensures an adequate intake of essential nutrients like zinc without excessive heavy metal consumption.

Description

Common to coastal areas around the world, oysters are a mullusk that has been harvested for thousands of years. Oysters are a rich source of protein, vitamins (especially B12), zinc, iron, copper, and omega-3 fatty acids.

Oysters are an excellent source of iodine, iron and are loaded with other vitamins and minerals, especially copper and vitamin B12. A 3-ounce serving provides 93 mcg of iodine or 62%DV.

How it helps

Oysters are rich in manganese, a mineral essential for proper brain and nerve function. Consuming oysters can thus help to maintain your manganese levels and potentially prevent deficiencies.

2

Spinach

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Incorporate one cup of fresh spinach or half a cup of cooked spinach into your daily diet. You can add spinach to salads, smoothies, omelets, or pastas to easily increase your intake.

Description

Spinach is a leafy green vegetable packed with essential nutrients, including vitamins A and K, iron, and folate. Incorporating spinach into the diet supports eye health, bone health, and overall nutrition.

Spinach is a good source of molybdenum, folate, calcium, and iron, as well as vitamins A, C, and K1. A ½ cup serving provides 8 mcg of molybdenum or 18%DV.

How it helps

Spinach is rich in manganese, a mineral that contributes to many bodily functions, including metabolism of amino acids, cholesterol, glucose, and carbohydrates. Consuming spinach can support these functions, thus helping to prevent manganese deficiency.

3

Chickpeas

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Incorporate chickpeas into your diet by adding them to salads, soups, and stews, or by making hummus. Aim for at least a half-cup serving, 3-4 times a week.

Description

Chickpeas, also known as garbanzo beans, are a good source of fiber, protein, and various vitamins and minerals. They can promote digestive regularity, provide sustained energy, and contribute to overall well-being when included in a balanced diet.

Chickpeas are a good source of minerals like manganese, iron, copper, zinc, and phosphorus, as well as folate and fiber. A ½ cup serving provides 0.9 mg of manganese or 39%DV.

How it helps

Chickpeas are rich in manganese, a nutrient that helps your body break down fats, carbohydrates, and proteins properly. By providing your body with enough manganese, chickpeas can prevent deficiencies that could lead to health issues.

4

Leafy Green Vegetables

IMPACT 2 / 5

EVIDENCE 1 / 5

How to implement

Incorporate at least one serving of leafy green vegetables, such as spinach, kale, or Swiss chard, into your diet daily. This can be done by adding them to salads, smoothies, or as a side dish to your meals.

Description

Leafy green vegetables like spinach and kale are packed with vitamins, minerals, and antioxidants. Incorporating them into your diet can promote overall health by providing essential nutrients, supporting digestion, and reducing the risk of chronic diseases like heart disease and certain cancers.

Leafy green vegetables, also called leafy greens, or greens, are edible plant leaves, which can include stalks and shoots as well. Common examples include: lettuce, spinach, kale, chard, endive, and fennel.

Leafy greens contain a host of vitamins and minerals, as well as fiber. Most of them are a particularly good source of vitamin K.

How it helps

Leafy green vegetables such as kale and spinach provide manganese, necessary for bone health and enzymatic reactions.

5

Legumes

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate a serving of legumes, such as beans, lentils, chickpeas, or peas, into your diet at least four times a week. A serving size is approximately half a cup cooked. Ensure to prepare them properly by soaking and rinsing beans, if applicable, to reduce anti-nutrients and improve digestibility.

Description

Legumes, such as beans, lentils, and chickpeas, are excellent sources of plant-based protein, fiber, and various vitamins and minerals. Including legumes in your diet can promote satiety and support digestive health.

Legumes are plants from the *Fabaceae* family. Their edible seeds are called **pulses**. Legumes are important food staples and sources of carbohydrates, fiber, protein, iron, and other key nutrients.

Common legumes include:

- Peanuts
- Beans
- Chickpeas
- Peas
- Lentils

How it helps

Legumes, including beans, lentils, and chickpeas, offer a healthy amount of manganese, supporting numerous body functions.

6

Mussels

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate mussels into your diet 2-3 times per week, preparing them steamed, boiled, or baked. Each serving should be approximately 3 ounces (85 grams), which is roughly equivalent to about 9-12 medium-sized mussels.

Description

Mussles are a type of shellfish, rich in nutrients like protein, omega-3 fatty acids, vitamins A, C, B12, and thiamine, as well as iron and calcium.

Mussels are a source of protein, minerals like manganese, iron, and calcium, omega-3 fatty acids, vitamins A, C, B12, and thiamine. A 3-ounce serving provides 5.8 mg of manganese or 252%DV.

How it helps

Mussels are a rich source of manganese which helps in bone development, absorption of calcium, and wound healing. Regular consumption can supply your body with needed manganese, preventing deficiencies.

7

Whole Grains

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate at least three servings of whole grains into your daily diet. This can include consuming foods such as whole grain bread, brown rice, whole grain pasta, and oats. Aim to replace refined grains with whole grains at each meal for optimal benefits.

Description

Whole grains encompass a variety of grains like wheat, oats, and quinoa, where the entire grain kernel is intact. They are rich in fiber, vitamins, minerals, and antioxidants, supporting heart health and reducing the risk of chronic diseases.

Unlike refined grains, whole grains contain nutritious parts of the grain like bran and germ.

Whole grains provide many crucial nutrients, including:

- Fiber
- B-vitamins
- Iron
- Magnesium
- Phosphorus

Due to their high fiber content, whole grains don’t tend to spike blood sugar like refined grains do.

How it helps

Whole grains are a source of manganese, which plays a role in a variety of physiological processes.

8

Blackberries

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate a serving of blackberries into your daily diet, which is about 1/2 to 1 cup. You can add them to your morning cereal, blend them into a smoothie, or eat them as a snack.

Description

Blackberries are a delicious and antioxidant-rich fruit packed with vitamins and fiber. They can promote immune health, support digestive regularity, and contribute to overall well-being.

How it helps

Blackberries are rich in manganese, which aids in important functions such as nutrient metabolism, bone health, and reducing oxidative stress. Incorporating them into your diet can help ensure your body gets enough manganese for these processes. One cup (approximately 144 g) of blackberries contains approximately 0.9 mg of Manganese (around 45% of RDI).

9

Hazelnuts

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate a handful of hazelnuts (about 1 ounce or 28 grams) into your diet daily. You can eat them as a snack, sprinkle chopped hazelnuts over salads, or use hazelnut butter in smoothies. Ensure they are unsalted to keep your sodium intake low.

Description

Hazelnuts are a nutrient-dense nut rich in healthy fats, fiber, and essential vitamins and minerals. Incorporating hazelnuts into your diet can support heart health, provide energy, and contribute to overall nutritional wellness.

Hazelnuts are a good source of manganese, magnesium, as well as being really good for vitamin E, B6, and healthy fats. A 1-ounce serving provides 1.6 mg of manganese or 70%DV.

How it helps

Hazelnuts are rich in manganese, a mineral essential for bone health and metabolism. Regular consumption can help to prevent manganese deficiency, improving your overall nutritional health.

10

Soy

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate soy-based products such as tofu, soy milk, and edamame into your daily diet. Aim for at least one serving per day, equivalent to about a cup of soy milk, a half-cup of cooked soybeans, or a 3-ounce piece of tofu.

Description

Soy is a legume native to East Asia, and its health benefits include being a source of plant-based protein, fiber, and various vitamins and minerals. It is known for its potential to support heart health, reduce cholesterol levels, and provide essential nutrients in vegetarian and vegan diets.

Soy is a common food in many cuisines around the world, especially Asian cuisines [R].

It’s a great source of [R, R]:

- Plant-based protein
- Fiber
- Omega-3 fats
- Antioxidants (isoflavones)

Soy-based foods include [R]:

- Soy beverages
- Tofu
- Tempeh
- Edamame
- Miso
- Natto

Soy protein and soy isoflavones are also available as supplements.

How it helps

Soybeans are a rich source of manganese, a mineral that plays a crucial role in many bodily functions including metabolism, bone formation, and the creation of enzymes that quench inflammation. By incorporating soybeans into your diet, you're providing your body with manganese that can help support these functions and potentially prevent a deficiency.

11

Lentils

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate at least 1/2 cup of cooked lentils into your daily diet. You can add them to salads, soups, or rice dishes for a nutritious boost. Continue this practice as a regular part of your diet to benefit from their high fiber and protein content.

Description

Lentils are a nutritious legume that provides a good source of plant-based protein, fiber, and essential vitamins and minerals.

Lentils are loaded with iron, protein, fiber, vitamins, minerals, like thiamine, phosphorus, zinc, manganese, and copper. A ½ cup serving provides 3 mg of iron or 17%DV.

How it helps

Lentils are rich in manganese, a mineral that supports bone health and aids in metabolism. Consuming lentils can help ensure you get enough manganese to prevent deficiency and maintain a healthy body.

12

Oats

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate oats into your diet daily by having them for breakfast as oatmeal, or adding them to smoothies, baking recipes, or overnight oats. Aim for at least a half-cup (40 grams) of dry oats to reap the health benefits.

Description

Oats are a whole grain known for their high fiber content and nutritional value, like zinc, iron, and manganese. Including oats in one's diet can promote heart health, stabilize blood sugar levels, and provide sustained energy.

Oats are a good source for manganese, zinc, iron, magnesium, and vitamins B1 and B5. A ½ cup serving provides 0.7 mg of manganese or 30%DV.

How it helps

Oats are high in manganese, a vital mineral that aids in bone formation and glucose metabolism. Regularly consuming oats can therefore help maintain healthy bone structure and manage your blood sugar levels, preventing manganese deficiency.

13

Brown rice

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Replace white rice with brown rice in your meals. Aim to consume brown rice 3-4 times a week, incorporating it into dishes such as stir-fries, salads, or as a side to your main protein source. Start with a serving size of about 1/2 to 1 cup of cooked brown rice per meal.

Description

Brown rice is a whole grain rich in fiber, vitamins, and minerals. It provides sustained energy, supports digestive health, and contributes to overall nutritional well-being.

Brown rice contains a host of B-vitamins including thiamine, and minerals like magnesium, phosphorus, manganese, and selenium. A ½ cup serving provides 0.1 mg of thiamine or 8%DV.

How it helps

Brown rice is a good source of manganese, a mineral that helps your body break down fats, carbohydrates, and proteins effectively. Eating it regularly can help prevent manganese deficiency by providing this essential nutrient your body needs.

14

Sweet Potatoes

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate sweet potatoes into your diet 2-3 times per week, either baked, steamed, or boiled, as a side dish or part of your main meals.

Description

Sweet potatoes are nutritious root vegetables packed with vitamins A and C, fiber, and antioxidants. They contribute to eye health, immune support, and overall nutrition.

Sweet potatoes are a rich source of vitamins, minerals, and antioxidants, including vitamins A, C, B5, and B6, fiber, manganese, and potassium. One potato provides 1,403 mcg of vitamin A or 156%DV.

How it helps

Sweet potatoes are a dietary source of manganese, important for the proper functioning of the digestive enzyme system.

15

Clams

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate cooked clams into your diet 2-3 times per week, either as part of main dishes, in soups, or salads. Each serving should be about 3-4 ounces (85-113 grams).

Description

Clams are a seafood source rich in essential nutrients like protein, vitamin B12, and minerals. Including clams in your diet can support healthy blood and nerve function, as well as overall nutritional well-being.

Clams provide manganese, vitamin B12, protein, and omega-3's along with being a good source of riboflavin. A 3-ounce serving provides 0.9 mg of manganese or 39%D.

How it helps

Clams are a good source of manganese, a mineral crucial for our body's operations like metabolism and antioxidant defense. A diet high in beneficial minerals such as those found in clams can help prevent a manganese deficiency, promoting overall health.

16

Pecans

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate about a handful of pecans (roughly 1 ounce or 28 grams) into your daily diet. You can eat them as a snack, sprinkle chopped pecans over salads, or blend them into smoothies. Aim to do this regularly as part of your daily dietary habits to enjoy their health benefits.

Description

Pecans are a type of nut derived from the hickory tree, primarily native to North America. They are rich in nutrients like healthy fats, protein, dietary fiber, and various vitamins and minerals, including vitamin E, manganese, and zinc.

Pecans are a good source of fiber, along with manganese, molybdenum, copper, thiamine, and zinc. A 1-ounce serving provides 1.1 mg of manganese or 48%DV.

How it helps

Pecans are rich in manganese, a mineral that aids in bone health and blood clotting. Regular consumption can help maintain healthy levels of this nutrient, potentially preventing deficiencies that can lead to issues like weak bones or slow wound healing.

17

Brussels Sprouts

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate brussels sprouts into your diet by eating them 2-3 times per week. They can be steamed, roasted, or sautéed and seasoned to taste, forming part of a balanced meal. Each serving should be about 1 cup, which roughly equals 5-6 medium-sized brussels sprouts.

Description

Brussels sprouts are a cruciferous vegetable packed with vitamins, fiber, and antioxidants. They are a nutritious addition to a balanced diet and may support immune health and overall well-being.

Brussels sprouts are good sources of vitamin C, vitamin K, fiber, as well as small amounts of other vitamins and minerals. A ½ cup serving provides 48 mg of vitamin C or 53%DV.

How it helps

Brussels sprouts are rich in manganese, which plays a crucial role in forming connective tissues and bones, promoting normal nerve function, and aiding in energy production. Their regular intake can prevent manganese deficiency, leading to healthier bone structure and nerve functions.

18

Coconut

IMPACT 1 / 5

EVIDENCE 1 / 5

How to implement

Incorporate coconut into your diet by adding 1-2 tablespoons of unsweetened coconut flakes to your breakfast cereal or smoothie daily. You can also replace cooking oils with virgin coconut oil when sautéing or baking, not exceeding 2 teaspoons per day to maintain a balanced intake of dietary fats.

Description

Coconut is a versatile fruit with potential health benefits, including providing healthy fats and dietary fiber. It can support satiety, digestion, and overall nutritional wellness when incorporated into a balanced diet.

How it helps

Coconut is rich in manganese, which aids in the metabolism of carbohydrates, proteins, and cholesterol, and promotes bone health. Thus, including coconut in your diet can help manage the manganese levels in your body. One cup (approximately 80 g) of fresh, shredded coconut contains approximately 0.828 mg (about 36% of RDI) of Manganese.

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.