myNutriGen™

Professional Nutrigenomic Advice

Fagron genomics

www.gxsciences.com

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METHODOLOGY AND LIMITATIONS: Testing for genetic variation/mutation on listed genes was performed using Real-Time PCR with TaqMan® allele-specific probes on the QuantStudio 12K Flex. All genetic testing is performed by GX Sciences, 4150 Freidrich Lane, Ste H, Austin, TX. 78744. This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Test results do not rule out the possibility that this individual could be a carrier of other mutations/variations not detected by this gene mutation/variation panel. Rare mutations surrounding these alleles may also affect our detection of genetic variations. Thus, the interpretation is given as a probability. Therefore, this genetic information shall be interpreted in conjunction with other clinical findings and familial history. Patients should receive appropriate genetic counseling to explain the implications of these test results. The analytical and performance characteristics of this laboratory-developed test (LDT) were determined by GX Sciences' laboratory pursuant to Clinical Laboratory Improvement Amendments (CLIA) requirements. CLIA #: 45D2144988 Laboratory Director: James Jacobson, PhD DISCLAIMER: This test was developed and its performance characteristics were determined by GX Sciences. It has not been cleared or approved by the FDA. The laboratory is regulated under CLIA and qualified to perform high-complexity testing. This test is used for clinical purposes. It should not be regarded as investigational or for research. rsIDs for the alleles being tested were obtained from the dbSNP database. DISCLAIMER: Report contents and report recommendations are created based on the consultation, advice, and direction of Dr. Kendal Stewart, Medical Director for GX Sciences. Sole responsibility for the proper use of the information on the GX Sciences report rests with the user, or those professionals with whom the user may consult. Report contents and report recommendations are intended to be informational only. Report contents and report recommendations are not intended and should not be interpreted to make claims regarding the use, efficacy, or safety of products, formulas, and/or services listed herein. Only a doctor or other appropriately licensed health care professional, as a learned intermediary, can determine if a formula, product, or service described herein is appropriate for a specific patient. Sole responsibility for the proper use of the information on the GX Sciences report rests with the user, or those professionals with whom the user may consult. DISCLAIMER: These products are not approved by the Food and Drug Administration and are not intended to diagnose, treat, cure, or prevent disease. These recommendations are for informational purposes only and an individual is not required to use such products. These are recommendations only and do not replace the advisement of your healthcare practitioner. This test is NOT for diagnostic purposes. It may identify general health risks that are associated with genetic variations but does NOT indicate a propensity for or susceptibility to any illness, disease, impairment, or other disorders, whether physical or mental.

Client name	**William Wellness**
Date of birth	**08-08-2000**
Sample code	**NUT16169AA**
Collection date	**11-14-2022**
Reception date	**11-17-2022**
Reported date	**11-17-2022**

Welcome to

myNutriGen™

Congratulations

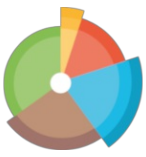
Your journey to a healthy lifestyle starts here!

We are committed to providing a service which meets state-of-the-art scientific standards combined with a full explanation of the conditions to which you are prone. Our laboratory has analysed your genetic sample for a list of key genes related to

nutrition

healthy living

weight management



food consumption

We are all unique

Patterns. Beauty. Body size.

What do these words mean to you when used together?
Forget about standards here. There are lots of different ways to be healthy.
The reason for this test is to find out things that you don't know about yourself.

Every person is unique because everyone has different genes and a lifestyle that is specific to them. So how can we find out what our ideal body weight is? Well, our "ideal" body weight is one that makes us feel well, energetic and healthy.

We know that being overweight can be associated with medical conditions like heart disease, strokes, cancer and diabetes. On the other hand, being underweight can lead to a weakened immune system and fragile bones. However, there are a wide range of body weights that can be healthy. Weight is just a number! On its own, it is not enough to evaluate how healthy you are. There are several other indicators that need to be considered.

Body sizes are not all the same and that is why everyone looks different as their shape is influenced by their genes, environment, diet and lifestyle.

For instance, two people can be the same height, have the same exercise routine, eat the same diet and weigh different amounts. So why is that? Because body sizes also depend on much more than just diet and exercise. Some specific diets may not be sufficient for one person's needs but they might be sufficient for someone else.

Since an ideal weight is an individual concept and these factors play a role, we use the term “healthy weight” instead of “ideal weight” or “adequate weight”. My perfect weight could be different to yours. Therefore, body comparisons that we see on social media and TV advertising could create unrealistic ideals.

Think about yourself. It is you who needs to feel comfortable and healthy in your body.

We are all different. We are all unique.

What you will learn
from your genetic report

I. About nutrition and genetics

We provide an explanation of some basic concepts of nutrition and genetics and how they are linked for you here in order to enable you to get the most out of our results.

II. Your results

We've prepared your genetic analysis based on SNPs, **single-nucleotide polymorphisms**, and evaluated your results, which are provided in full here.

Efficacies

- Morphological genetics with regard to a predisposition to being overweight
- Behavioural genetics associated with food consumption
- Efficacy of exercise
- Fat metabolism
- Carbohydrate metabolism
- Lipid metabolism
- Flavour sensitivities
- Detoxification imbalances
- Efficacy of low carbohydrate diets
- Efficacy of low fat diets
- Efficacy of low calorie diets

Risks

- Calcium malabsorption risk
- Predisposition to dysregulated calcium levels
- Risk of iron overload
- Risk of low iron plasma levels
- Predisposition to dysregulated magnesium levels
- Predisposition to dysregulated selenium levels
- Sodium sensitivity
- Lactose intolerance risk
- Alcohol metabolism
- Caffeine metabolism
- Fructose intolerance risk
- Vitamin A, B6, B9, B12, C, D, E deficiency

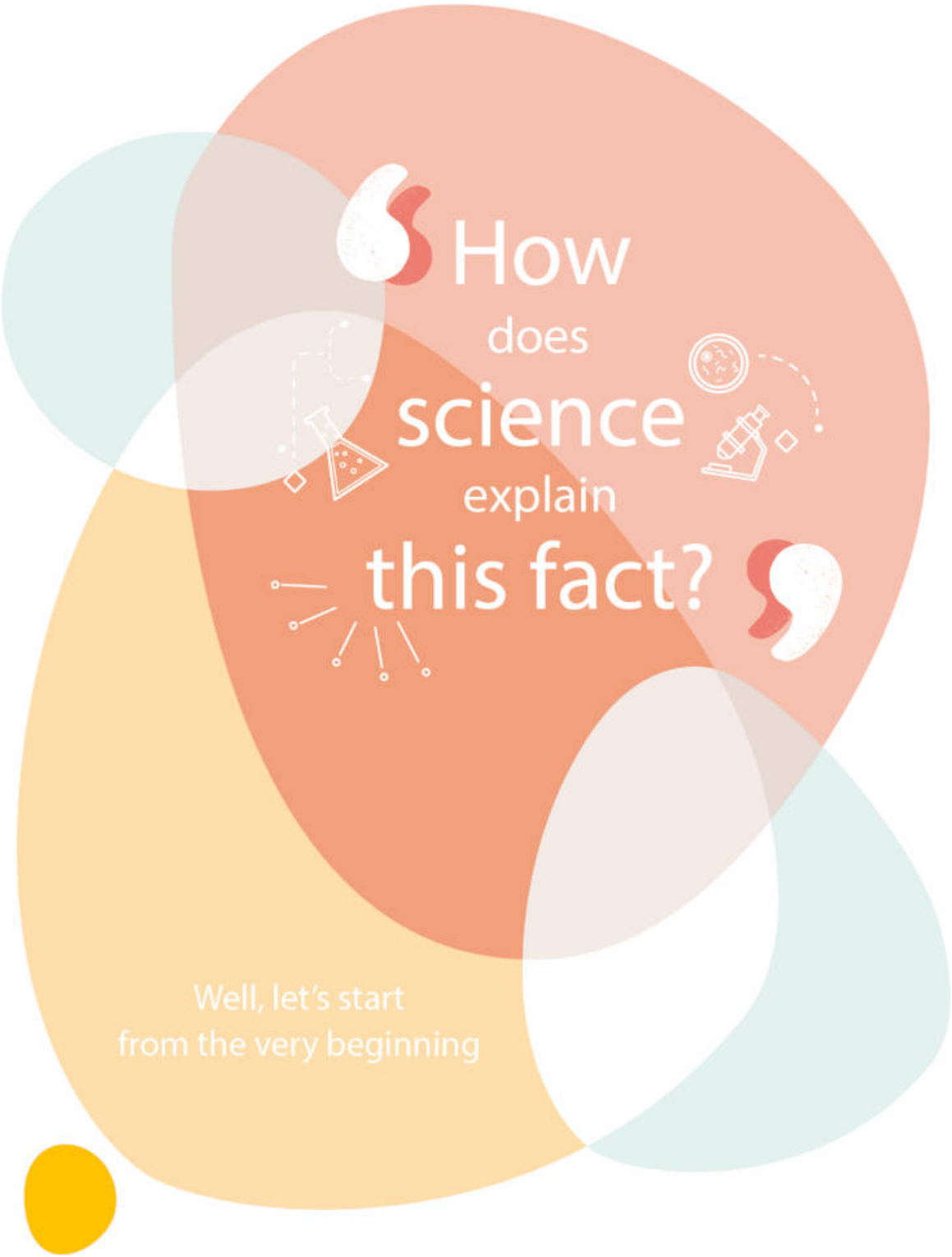
III. Your personalized diet plan

Compiled on the basis of your genetics and your answers to the clinical questionnaire. Here is a list of supplements and foods you need to meet your needs and keep yourself healthy.

I.
About nutrition and genes

Understanding
how our body works

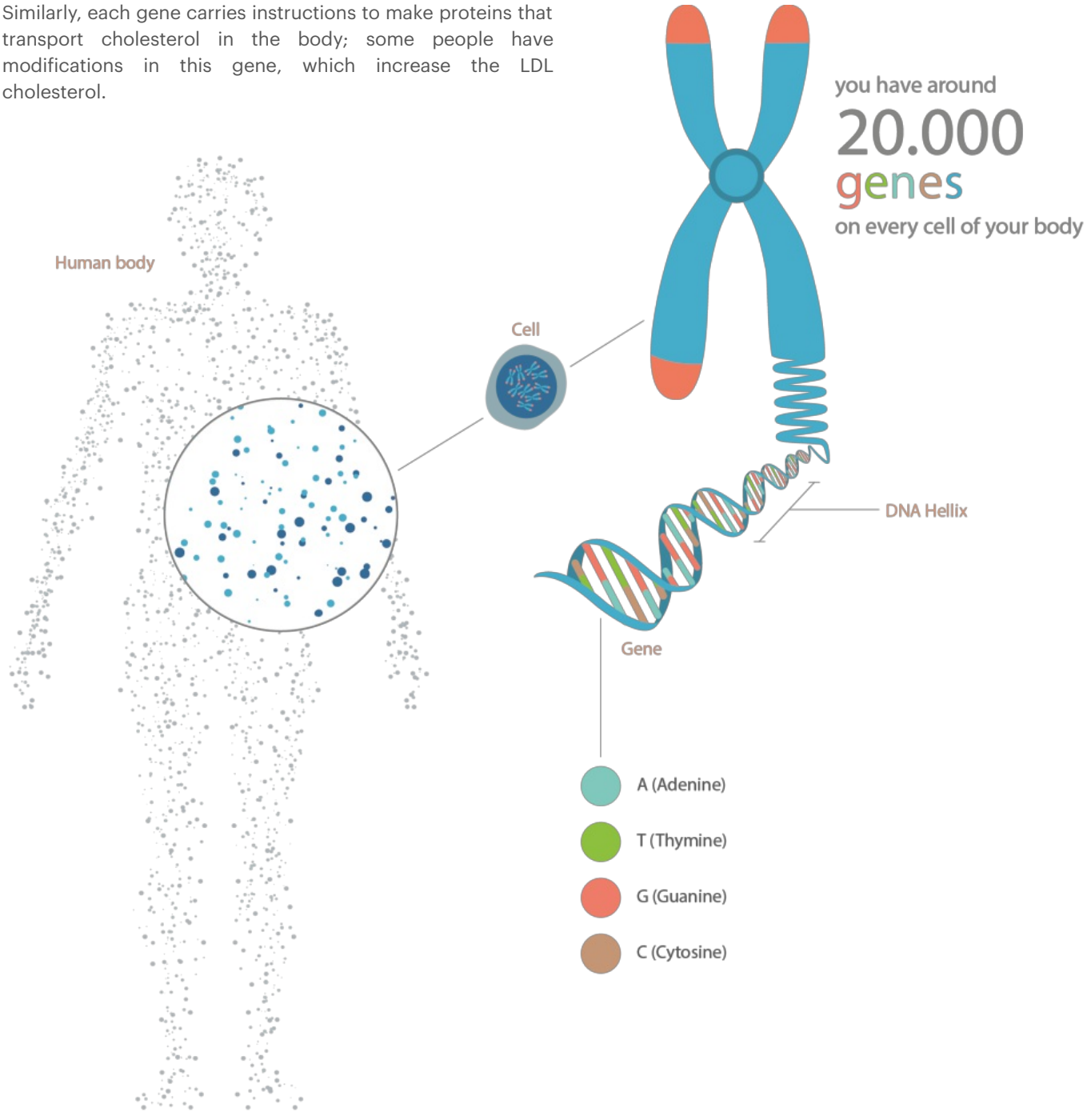
Have you ever wondered why people try to plan a diet and are unable to lose weight? Does everyone in your family wear the same shoe size? The issue is one size may not fit all and this rule applies to both shoes and our nutrition. For instance, two women of the same age, weight, height and physical activity level may follow the same diet and experience completely different results. Since we are all different, our bodies respond differently to a similar stimulus.

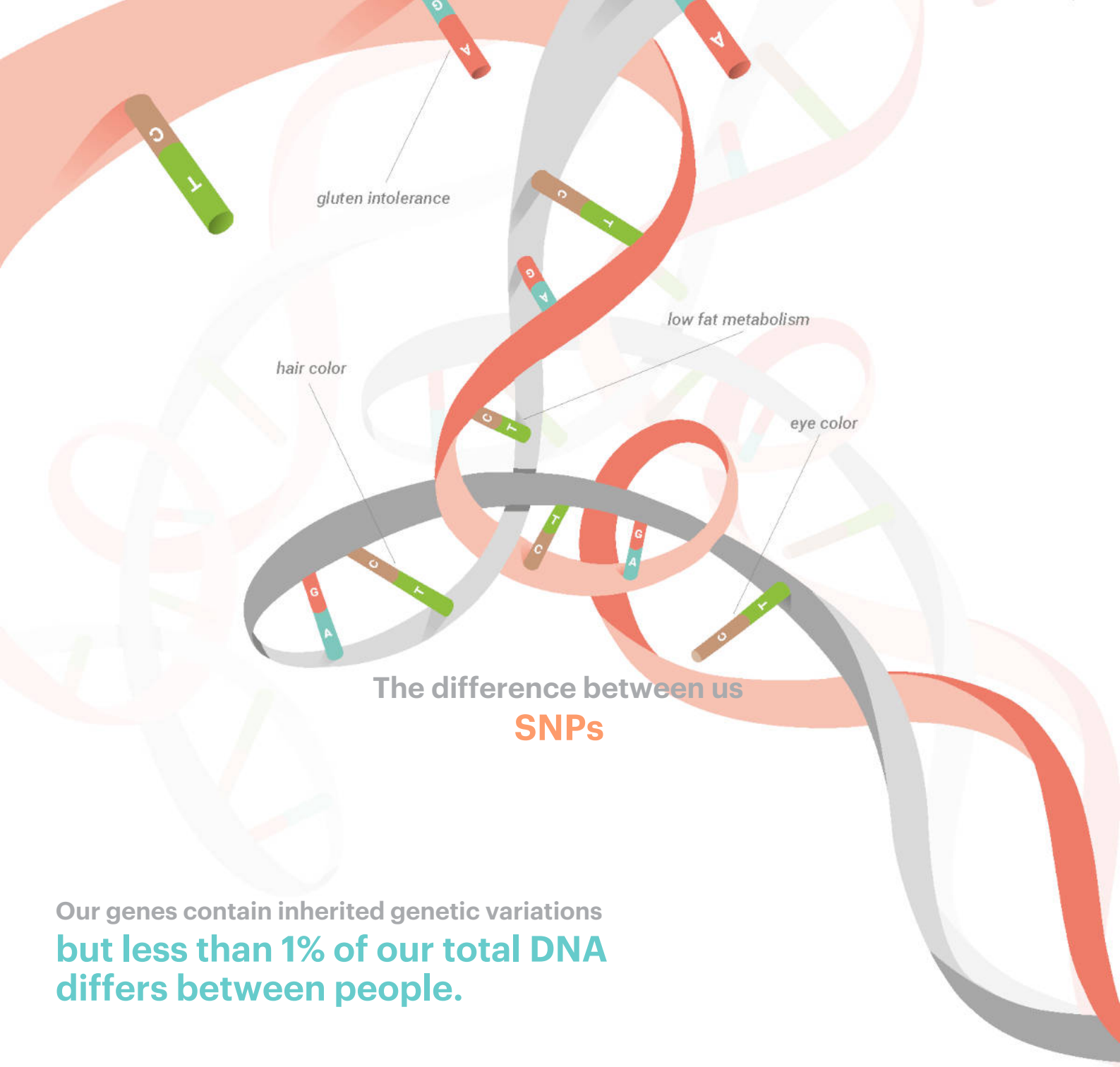


A brief reminder about
genes

Our genes are an instruction manual for our body, providing us with the instructions we need to make molecules called proteins. Proteins perform various functions in our body to keep us healthy, like transporting nutrients to our cells, creating hormones and forming our tissue, like muscles and skin. Each gene carries instructions that determine your features and make us unique. For instance, each gene carries instructions to make enzymes that break down nutrients in our body, such as lactose, so if you have any alterations in this gene, it is likely that you will be lactose intolerant. Similarly, each gene carries instructions to make proteins that transport cholesterol in the body; some people have modifications in this gene, which increase the LDL cholesterol.

DNA is a type of nucleic acid that carries our genetic information. It is hidden inside almost every cell in our body and it is made up of millions of small chemicals called nucleotides. There are four types of these chemicals: A (adenine), C (cytosine), T (thymine) and G (guanine). Our genes are so tiny that you have around 20,000 of them inside every cell in your body! Your entire sequence of genes and bases is called your GENOME.





The difference between us
SNPs

Our genes contain inherited genetic variations
but less than 1% of our total DNA differs between people.

These differences are known as a genetic variants or single nucleotide polymorphism (SNP). SNPs are the most common type of genetic variation among people and are an exchange of one nucleotide for another in the DNA code. So, with this kind of variation, where one person has nucleotide C, for example, another person may have nucleotide T. This simple modification can give one person blue eyes and another person green eyes and these small differences contribute to our unique features.

Over 20 million validated SNPs have been identified and they have been the basis of this genetic work, which associates specific genetic variants with certain diseases or health conditions. This research analyzes the genome of lots of different people and searches for predictive markers for a particular condition. This allows us to detect specific genetic predispositions to diseases or health-related conditions, such as food intolerances and nutrient metabolism.

So we know that SNP analysis works like this:
the more SNP is analysed, the more accurate the results will be and the more information we will have. Therefore, knowing more allows us to make better predictions.

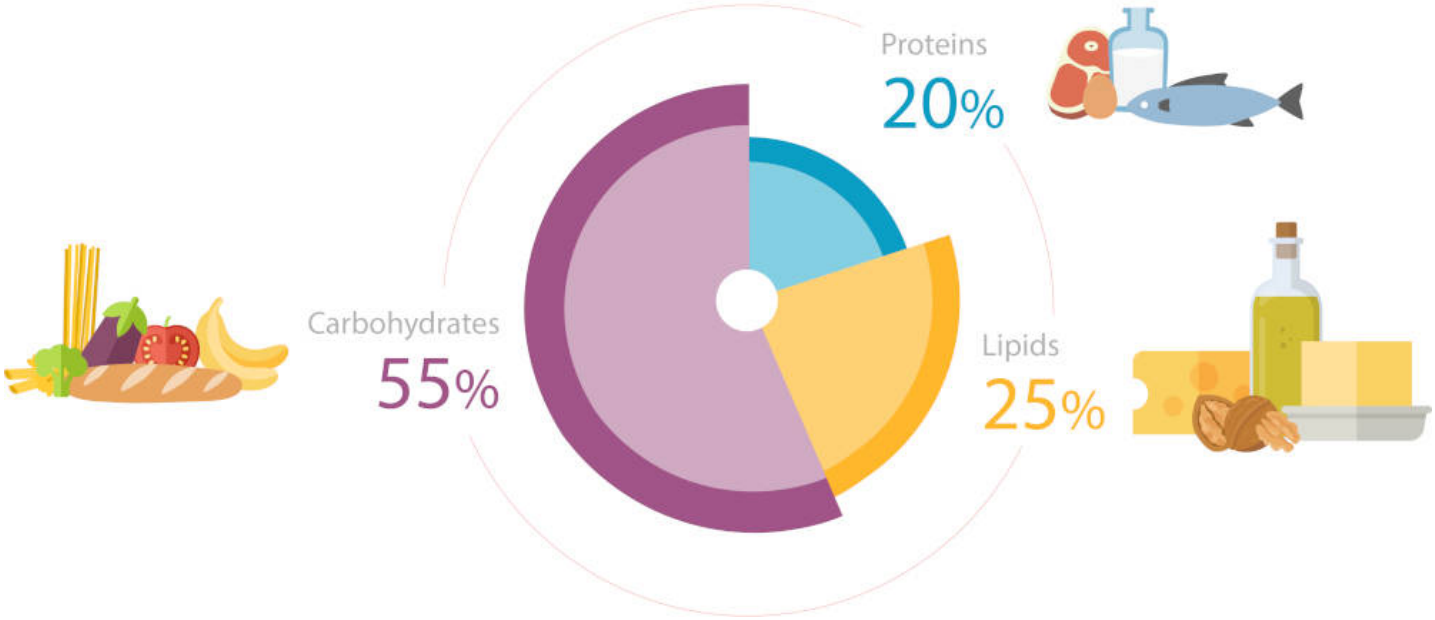
Genetics and nutrition

Is this combination useful?

We know that the nutrients we take in can affect our genetic makeup and this is called **nutrigenomics**.

We also know that our genes affect how our body responds to nutrients and this is called **nutrigenetics**.

Nutrigenomics, on the one hand, looks at how many nutrients or calories an average person should consume and how certain supplements can affect you. On the other hand, **nutrigenetics** studies the relationships between genes and diets and how our health is affected by this.



Nutrition and health are very individual because not everyone responds in the same way to the same diet or nutrition strategy. This means that some people find it easier to maintain a healthy body composition whereas others will struggle to reach this goal even if they follow a good diet and exercise plan.

Therefore, studying nutrigenetics helps us to understand how our genes determine the effects that nutrients have on our body and health. In other words, how our body responds to what we eat. This is based on specific genes that relate to human nutrition like nutrient absorption and utilisation, food intolerances, behavioural genetics in food consumption and nutrient deficiencies.

For instance, nutrigenetic information can outline whether you have the genetic variation that makes you predisposed to lower vitamin B12 absorption, which can lead to a vitamin B deficiency. It also provides details about how your body composition and weight respond to certain proportions of proteins, carbohydrates or lipids and how your health statistics, like cholesterol and triglycerides, change based on what you eat.

Therefore, nutrigenetics forms the basis
of personalized nutrition and supplementation!

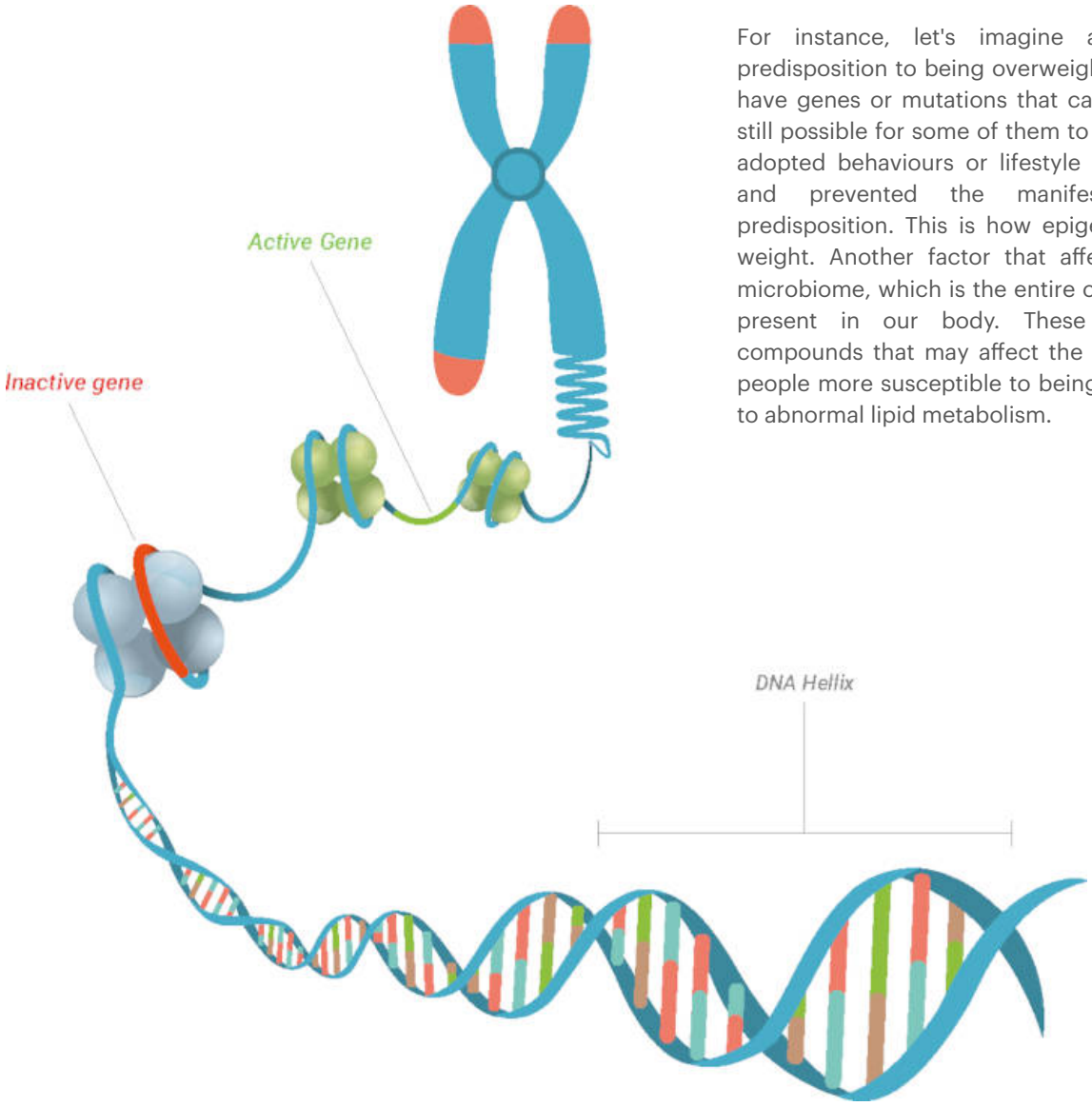
Sleeping and awakening genes...

have you ever heard of them?

The DNA of a human cell has all the information necessary to produce more than 20,400 different proteins. It is a challenge to store all this information in an organised way. Therefore, the solution to this problem is tightly packing the DNA and switching genes "on" and "off" as needed, also known as "sleeping" and "awakening" genes.

The study of these switches is called epigenetics and these changes are known as the epigenome. So, when the gene is turned on a protein will be produced and when it is turned off protein production will stop. These modifications may lead to a feature or condition. For instance, if the gene that carries the information to produce lactase, the enzyme that breaks down lactose, is sleeping then the person may be lactose intolerant.

For instance, let's imagine a family with a genetic predisposition to being overweight, so everyone in the family have genes or mutations that cause this predisposition. It is still possible for some of them to be slim. Why? Because they adopted behaviours or lifestyle habits that protected them and prevented the manifestation of the genetic predisposition. This is how epigenetics can help us to lose weight. Another factor that affects the epigenome is our microbiome, which is the entire collection of microorganisms present in our body. These microorganisms produce compounds that may affect the epigenetic process, making people more susceptible to being overweight, to obesity and to abnormal lipid metabolism.



The good news is that it is now possible to use this knowledge to improve everyone's life.

How? By analyzing a set of genes related to weight control. This means that, once people know their genetic predispositions, they can protect themselves from the tendency to gain weight by adopting the appropriate behaviours. This is no longer merely an aesthetic decision based on general advice about healthy eating but is important because people are aware that it is necessary to contradict a genetic predisposition that has been present since birth.

What is a diet plan
and a personalized diet?

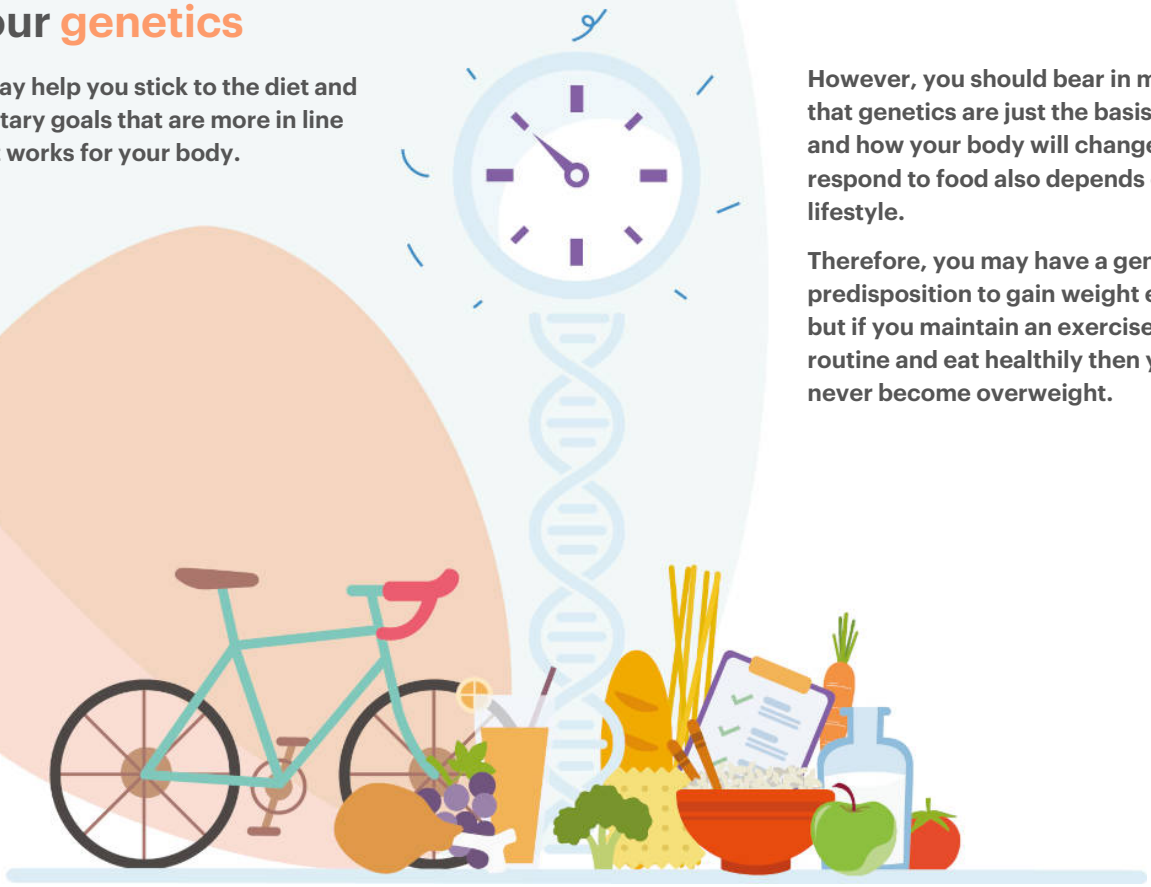
Let's think about it: have you ever tried to lose weight or put on muscle following a restricted diet and been unsuccessful? Do you know why? It happens because most diets are based on general nutrient recommendations and these are based on the average requirements for the population. A traditional diet plan is prepared considering the requirements for calories, macronutrients, like proteins, carbohydrates and lipids, and micronutrients, such as vitamins and minerals, according to the individual's age group and physiological condition.

A traditional balanced diet aims to achieve the individual's goals and help people be healthy. In this context, the principal components of a healthy diet and lifestyle are universal. Everyone is going to benefit from eating more whole foods, avoiding excessive sugar, alcohol, and processed foods, getting enough sleep and doing some physical exercise.

Nevertheless, people are metabolically, physiologically and genetically different so they have different responses to foods. Nutrigenetics are studied in order to develop a personalized diet that solves this issue.

personalized diets are customised based on your genetics

so they may help you stick to the diet and target dietary goals that are more in line with what works for your body.



However, you should bear in mind that genetics are just the basis of this and how your body will change or respond to food also depends on your lifestyle.

Therefore, you may have a genetic predisposition to gain weight easily but if you maintain an exercise routine and eat healthily then you may never become overweight.

What do I need to eat
to be healthy?

First, our body needs fuel to work, just like a machine needs power or battery or like a car needs petrol to run. The body's fuel is called nutrients and we can find them in food. Our body needs these nutrients for three basic purposes: energy, building materials and controlling body processes. And they can be classified into two groups based on how much our body needs them:

Macronutrients ›
nutrients that the body needs in relatively large amounts: **carbohydrates**, **proteins** and **lipids**.

Micronutrients ›
nutrients that the body needs in relatively small amounts: **vitamins** and **minerals**.

Let's start with macronutrients

1. Carbohydrates

Carbohydrates are nutrients that release glucose when they are broken down and glucose is an energy molecule, which means that when we eat carbohydrates, we are giving energy to our body. Carbohydrates are classified as either simple or complex:

Simple carbohydrates are sugars that release glucose quickly to the body. They can be found in fruit, milk, dairy products and sugar. The main function of simple carbohydrates is to provide energy to the body.

Complex carbohydrates also release glucose to our body but at a slower release speed so they also provide energy. They include starches and fibre, which are found in plant-based foods such as vegetables and grains, e.g. rice, corn and wheat, and products made with them.

IMPORTANT TO KNOW
if you eat more carbohydrates than your body needs, the excess will be stored as fat.

2. Lipids

Lipids are organic compounds that store and provide energy to the body. This is just like a car petrol tank, which stores fuel to be used in the future. Lipids provide more than twice the amount of energy provided by carbohydrates and proteins. Lipids have several other functions as well. They make up the membranes that surround cells and help to regulate hormones and body temperature. Lipids are formed by fatty acids, which can be classified as saturated, unsaturated and trans fatty acids.

Saturated fatty acids have properties that make them unhealthy so the amount of them we consume should be kept as low as possible. They can be found in animal foods such as meat, whole milk and eggs.

Unsaturated fatty acids have properties that make them healthier. They are found mainly in plant-based foods like vegetable oil, e.g. olive oil and soybean oil. You have probably heard about two well-known unsaturated fatty acids: omega-3 fatty acids and omega-6 fatty acids. They are called essential fatty acids because we need to consume them in our diets. They are found in salmon, vegetable oil, flaxseed, eggs and whole grains.

Trans fatty acids are manufactured from plant oils and do not occur naturally. Trans fat is made by the food industry in a process that makes the oil less likely to go off. Trans fats have properties like saturated fats. **Therefore, they should be avoided in a balanced diet.** They can be found in processed foods, such as chip, crackers, salad dressings and margarine.

3. Proteins

Proteins are organic compounds that make up the majority of our muscle tissue. If your body was a house, the bricks in the walls would be protein. In addition, proteins regulate many body processes and transport nutrients and other vital substances in the blood. Dietary proteins are broken down during digestion to provide amino acids to cells that make proteins for the body. Some of these amino acids can be synthesised by our body, whereas others cannot and must be obtained from foods. The latter type is called an “essential amino acid”.

Proteins that contain all essential amino acids are known as **complete proteins**, and it can be found in animal foods such as milk, dairy products and meat. On the other hand, proteins that are missing one or more essential amino acids are called **incomplete proteins**, and it can be found in plant foods such as legumes and grains.

IMPORTANT TO KNOW

If you eat a variety of different plant foods containing incomplete proteins, you can include all essential amino acids in your diet. Also, if you eat more protein than your body needs, the excess will be used for energy or stored as fat.

What about micronutrients?
Why they are important?

1. Vitamins

Our body needs all of them in significant amounts every day and they are just as important as macronutrients. Vitamins are necessary for energy production, immune function, blood clotting and other functions and they can be classified into two types:

Water-soluble vitamins ›

B vitamins and vitamin C make up this group. Your body can't store them to use later so you need to get more of them on a daily basis. They play an important role in producing energy

Where can I find them?

Vitamin B1
Cauliflower, eggs, potatoes, asparagus and kale

Vitamin B2
Fish, meat and poultry, beef, eggs, dairy products, avocados

Vitamin B3
Meat, salmon, leafy greens, beans

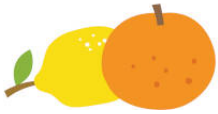
Vitamin B5
Offal, mushrooms, tuna, avocado

Vitamin B6
Fish, milk, carrots, potatoes

Vitamin B6
Eggs, almonds, spinach, sweet potatoes

Vitamin B9
Beef, liver, black-eyed peas, spinach, asparagus

Vitamin B12
Clams, fish, meat



Vitamin C
Citrus fruits, peppers, Brussels sprouts

Fat-soluble vitamins ›

Unlike water-soluble vitamins, fat-soluble vitamins dissolve in fat, not water. These include vitamins A, D, E and K. When you consume them, they can be stored in your body. They are important for eye health and immune system support. They also help your body to heal injuries.

Vitamin A
Retinol (liver, dairy, fish), carotenoids (sweet potatoes, carrots, spinach)

Vitamin D
Fish oil, milk, dairy products

Vitamin E
Sunflower seeds, wheat germ, almonds

Vitamin K
Leafy greens, soybeans, pumpkin

2. Minerals

Minerals can be classified as macrominerals and trace minerals.

Macrominerals ›
are needed in larger amounts, more than 100mg/day, in order to perform their specific roles in your body. They are necessary to protect the proper structure and function of bones and teeth; they assist with over 300 enzyme reactions and help maintain fluid balance. For example: calcium, phosphorus, magnesium, sodium, potassium.

Where can I find them?

Calcium
Milk products, leafy greens, broccoli

Phosphorus
Salmon, yogurt, turkey

Magnesium
Almonds, cashews, black beans

Sodium
Salt, processed foods, tinned soup

Potassium
Lentils, acorn squash, bananas

Trace minerals ›
are needed in smaller amounts, less than 100mg/day, but they are still important for our body function. They help provide oxygen to muscles and assist in the creation of certain hormones, assist in carbohydrate, protein and cholesterol metabolism and thyroid regulation and are necessary for normal growth and immune function. For example, iron, zinc, selenium, copper and manganese.

Where can I find them?

Iron
Oysters, white beans, spinach

Manganese
Pineapple, pecans, peanuts

Copper
Liver, crabs, cashews

Zinc
Oysters, crab, chickpeas

Selenium
Brazil nuts, sardines, ham

II.
Your results

Personal information

Summary of your body and metabolic parameters

Weight-related variables

Client name	**William Wellness**
Date of birth	**08-08-2000**
Height	**5 ft 11 ins**
Current weight	**190 lbs**
Goal weight	**175 lbs**
Current BMI	**26.49**
Target BMI	**24.40**
Sample code	**NUT16169AA**

Physical exercise and metabolism-related factors

Daily exercise

Basal metabolism

Current (Kcal)	**1,883**
Target (Kcal)	**1,815**

Current DEE

Current (Kcal)	**3,579**
Target (Kcal)	**3,449**
Variation (Kcal)	**-130**

What can I expect from a genetic test?

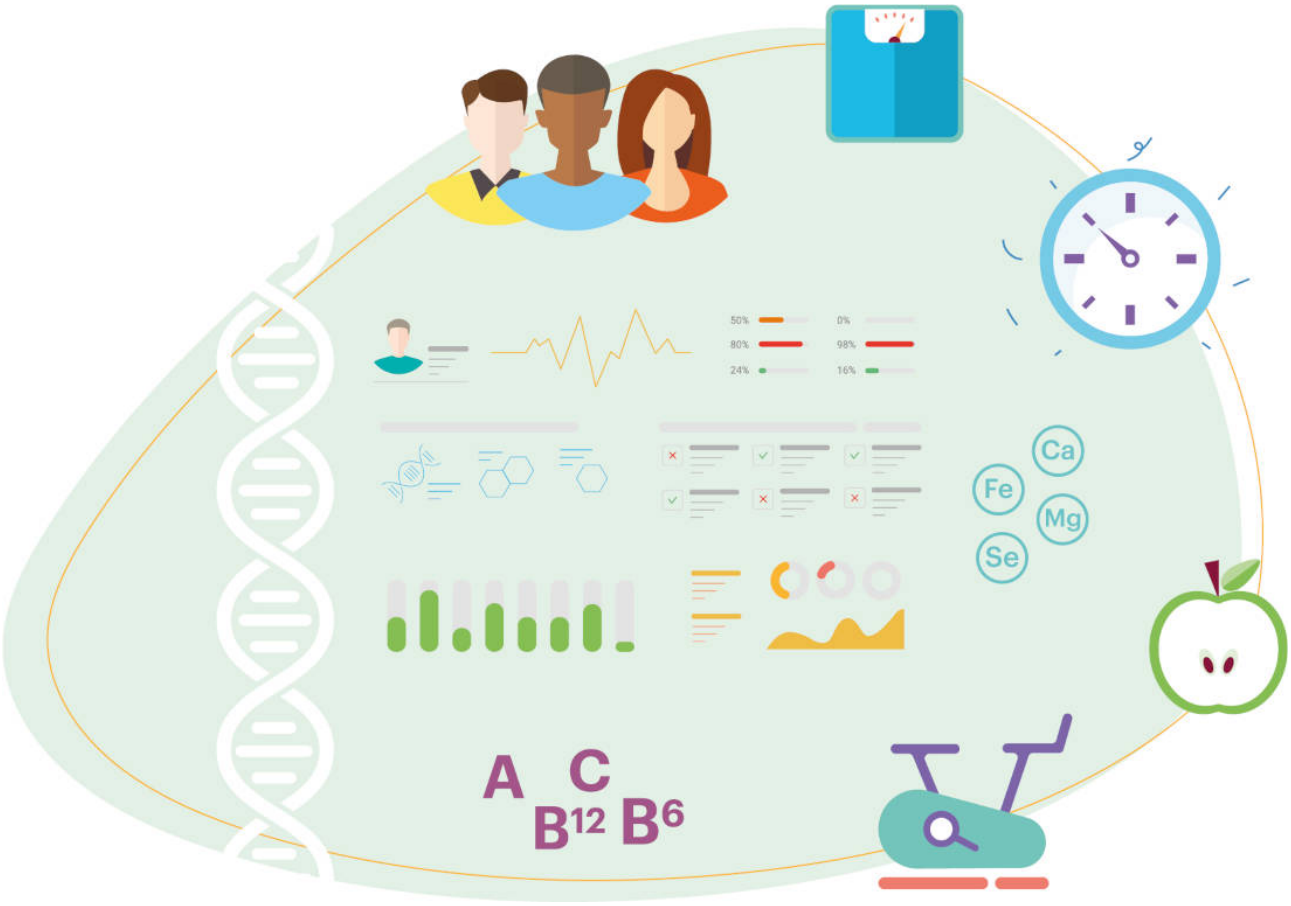
Your genes carry all the information about you, from your eye and hair color to how your body responds to food and physical exercise.

Our genetic test analyzes variations of the most relevant genes related to different metabolic pathways which are involved in weight management and nutritional needs. All these genetic variations are connected to your health status and the genetic results will help you find out how your body works.

However, understanding how your body responds does not allow us to provide a diagnosis. A genetic test tells about genetic predispositions! The genetic tests look for information in your genes which show if you're more likely to have specific health conditions from a genetic mutation, like lactose intolerance or a high risk of being obese.

Or, when we analyse your genes, we may discover an increased predisposition to high LDL cholesterol levels, the "bad cholesterol" but this doesn't guarantee that your levels will actually be high. If we are aware of this risk, we can give you some advice to improve your health, such as increasing or reducing your consumption of particular foods and recommending personalized supplements to prevent, for instance, this lipid alteration.

Nevertheless, before you change your lifestyle and diet, we recommend that you consult a healthcare professional, who can assess your genetic results together with your medical history and a blood test.



Bear in mind...

Our health and nutritional conditions do not only depend on our DNA! We are the result of our genetics, plus the environment we live in and our lifestyles. By combining your genetic knowledge with advice from a healthcare professional, you can maintain a healthy weight even, for instance, with a genetic predisposition to being obese by exercising regularly and having a balanced diet.

1.
Morphological genetics in overweight predisposition

This category analyzes genes related to gain weight, body fat, the risk of being overweight or obese and energetic metabolism.

Nutritional information

Being overweight and obesity is about excessive fat accumulation that poses a health risk and affects about 1.9 billion adults worldwide. Obesity is a multifactorial disease influenced by external factors, such as diet and physical exercise. However, it is also strongly associated with individual genetics. In this way, understanding your genetics is a crucial tool for managing your weight.

Obesity is considered a significant risk factor for chronic diseases such as cardiovascular diseases, mainly heart disease and strokes, type II diabetes and some types of cancers, including endometrial, breast, ovarian, prostate, liver and colon cancer. The risk of getting these noncommunicable diseases is higher when your weight is higher. In addition, obesity has been related to micronutrient deficiencies, mainly because of decreased consumption of vitamin-rich and mineral-rich foods, such as fruit and vegetables.

If you have a high genetic risk for obesity, this does not necessarily mean that you will be obese or overweight. It means that you have a predisposition to excess body fat and to gaining weight. However, with a balanced diet and regular physical exercise prescribed and coordinated by a healthcare professional based on your genes and health condition, you may not have to be overweight.

There are many strategies to lose weight, but all these strategies include caloric restriction, which means eating fewer calories than you need. However, to get a personalized evaluation and diet prescription, we recommend that you consult a healthcare professional to build a diet plan according to your needs and goals.

1.1 Genetic risk of overweight/obesity

Obesity is highly prevalent in populations whose environments promote physical inactivity and increased consumption of high-calorie foods. However, not all people living in such environments will become obese. These differences can be found in people of the same ethnicity and even between families. Nevertheless, how people respond to the same environment may indicate that genes play a role in obesity development.

In this sense, genetic variations could influence behaviours, such as a desire to overeat and a tendency to be sedentary, or metabolism, such as a reduced capacity to utilise dietary fats as fuel or an increased tendency to store body fat. These variants in genes may contribute to obesity by increasing hunger and food intake.

Therefore, this section analyzes genetic predisposition to being overweight or obesity. The higher this genetic risk, the higher your probability of being overweight.

Your result

- MEDIUM-HIGH RISK -

CATEGORY	DESCRIPTION
Genetic risk of overweight/obesity	You probably have an increased genetic risk of obesity, which means that factors like low satiety and increased food intake can explain the cause of your excess weight. You should reduce your consumption of processed and ultra-processed foods, such as snacks, crisps, sausage rolls and pies, bacon, sausages, ham, salami, processed cookies and cakes, as well as foods rich in sugar and fats and use olive oil instead of animal fat. Increasing your consumption of natural foods like fruit and vegetables and taking physical exercise, as recommended by the guidelines for training, will also help. Also, it is essential to drink enough water, about 35 to 40 ml/kg per day, and get enough sleep. It is recommended to consult a healthcare professional for personalized prescriptions and adjust your diet and physical exercise regime.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
MC4R-1	rs2229616	CC	**High**	Higher risk of obesity. High predisposition to increased glycosylated hemoglobin (increased risk of type 2 diabetes) and decreased HDL-cholesterol levels.
SH2B1-2	rs7498665	AG	Medium	Increased predisposition to obesity and insulin resistance.
FTO-1	rs9939609	AT	Medium	Predisposition to obesity, related to insulin resistance, hyperphagia, and increased risk of type 2 diabetes.
FTO-2	rs1121980	AG	Medium	Increased risk of obesity related with insulin resistance, hyperphagia, and increased risk of type 2 diabetes.
MC4R-2	rs17700633	AG	Medium	Increased risk of obesity and type 2 diabetes.

1.2 Risk of rebound weight gain

Have you ever wondered why some people regain the weight they lost during a diet and others don't? There is an explanation for that.

Firstly, it is essential to notice that several strategies can be used to induce weight loss, such as lifestyle changes, reduction of calorie consumption, an increase in physical activity, a behavioural approach and pharmacological or surgical treatment. These strategies may lead to significant weight loss but each individual responds differently. Weight loss is complex and depends on many environmental and genetic factors. The gene-environment interaction explains why some individuals are more prone to weight gain than others who live in the same environment.

Having this genetic predisposition does not necessarily mean that you will be obese. It means you will have more difficulty maintaining a lower body weight after a weight loss diet.

To avoid gaining weight, it is essential to maintain a healthy lifestyle and regular physical activity levels, which should be prescribed and coordinated by a healthcare professional based on your genes and health condition. This healthy lifestyle includes reducing refined carbohydrates, such as sugar, wheat flour and saturated fats, and instead prioritise complex carbohydrates, like wholegrain bread, pasta, rice, oats, cereals and lightly processed grains, roots and tubers such as sweet potatoes, vegetables and fruits. These foods are rich in fibre and are therefore more satiating than processed products with refined flours. As such, consumption of fibre-rich foods may reduce food intake, leading to better weight control. Also, it is recommended to increase your intake of lean meats such as chicken breast, fish and shellfish, and foods with omega-3 and omega-6 fatty acids, such as nuts, fatty fish, salmon and sardines.

Your result

- HIGH REBOUND EFFECT -

CATEGORY	DESCRIPTION
Risk of rebound weight gain	You probably have an increased risk of weight rebound after dietary interventions, which means you may have difficulty losing weight during a diet. So, it will take extra effort to lose weight and keep it off later. It is recommended that you change your lifestyle and diet to ensure you do not regain weight but be aware that this change will take time to implement. This lifestyle change includes avoiding refined carbohydrates, such as sugar and wheat flour, and saturated fats, and instead prioritising complex carbohydrates, like wholegrain bread, pasta, rice and oats, cereals and lightly processed grains, roots and tubers, such as sweet potatoes, vegetables and fruit. Also, it is recommended to increase your intake of lean meats such as chicken breast, fish and shellfish, and foods with omega-3 and omega-6 fatty acids, such as nuts, fatty fish, salmon and sardines. A severe calorie restriction diet may not be the best strategy for you since it can lead to rapid weight regain. For better monitoring of your health, it is recommended that you consult a healthcare professional for a personalized diet and recommendations.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
ADIPOQ	rs17300539	GG	**High**	Predisposition to regain weight after dieting.

1.3 Risk of increased BMI

Risk for high Body Mass Index – BMI. BMI measures a person's body fat based on their height and weight. BMI is used to determine if an individual is in a healthy weight range for their size. So, the higher your BMI, the closer you are to being overweight or obese.

You can calculate your BMI by dividing your weight in kilograms by your height in metres squared (m2). Your BMI will classify you as 'underweight,' 'healthy weight,' 'overweight,' or 'obese,' as defined by the World Health Organization.

If your BMI is under 18.5 kg/m2, you are considered underweight and possibly malnourished; if it is up 18.5 to 24.9 kg/m2 then you are within a healthy weight range for young and middle-aged adults; if it is up 25.0 to 29.9 kg/m2 you are considered overweight; and if it is over 30 kg/m2 you are considered obese.

BMI is a helpful tool for evaluating the health of a population. However, fat distribution on our body is more important than the amount of fat when it comes to predicting disease risk. For this reason, waist circumference may be a better predictor of health risks than BMI. Increased abdominal fat accumulation, measured using waist circumference, is related to a higher risk of cardiovascular disease, type 2 diabetes and cancer. For those reasons, regardless of your results, it is essential to consult a healthcare professional for a better evaluation, a personalized diet and recommendations.

Your result

- LOW RISK -

CATEGORY	DESCRIPTION
Risk of increased BMI	This result means you have a reduced genetic risk of increased BMI. Despite this result, we recommend a periodic evaluation of your body fat percentage and waist circumference. Also, to maintain a healthy weight, it is essential to follow dietary guidelines that prioritise consumption of fresh or minimally processed foods, such as vegetables and fruit, moderate consumption of foods of animal origin, use oils, fats, salt and sugar in small amounts and control the number of calories you consume. Physical exercise may also help. We recommend consulting a healthcare professional for a more precise evaluation and a personalized diet and physical exercise programme.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
MC4R-3	rs12970134	GG	Low	Normal risk of increased BMI.
MC4R-4	rs17782313	TT	Low	Normal risk of increased BMI.
SH2B1-1	rs4788102	GA	Medium	Increased risk of increased BMI, increased waist circumference, and type 2 diabetes.

1.4 Basal metabolic rate (burn calories at rest)

Basal metabolic rate is the body's ability to burn calories at rest, in other words, the energy your body expends to stay alive without making any physical effort.
The BMR is influenced by multiple factors working in combination, including: Body size: larger adult bodies have more metabolizing tissue and a higher BMR.

- Amount of lean muscle tissue: the higher the amount of skeletal muscle, the higher the BMR.
- Crash dieting, starving or fasting: eating too few calories encourages the body to slow down its metabolism to conserve energy.
- Age: metabolism slows with age due to loss of muscle tissue and hormonal changes.
- Gender: Generally men have faster metabolisms because they tend to be larger.
- Environmental temperature: if the temperature is very low, your body will have to work harder to maintain its average body temperature. This mechanism increases the BMR.
- Physical exercise: Regular exercise can increase muscle mass and make the body burn calories faster, even when at rest. This exercise should be prescribed and coordinated by a healthcare professional based on your genes and health conditionn

Finally, genetic predisposition also affects your BMR so your genes can make you burn more or fewer calories at rest.

As your BMR is critical to your total energy consumption, it is essential to maintain or increase your lean muscle mass when losing weight. This means that combining weight-bearing and resistance exercises with healthier eating patterns is better than dietary changes alone. On the other hand, eating too few calories makes your body slow down its metabolism to conserve energy.
is category analyzes your genetic predisposition to have a high or low capacity to burn calories at rest: the greater the power to burn calories, the lower your chance of being overweight.

Your result

- MEDIUM-LOW BURNER -

CATEGORY	DESCRIPTION
 **Basal metabolic rate (burn calories at rest)**	You have a medium-low energy/calorie-burning capacity. Metabolic adaptation to a low-calorie diet plan may be slightly slow and may lower your BMR in the long term. This means your basal metabolic rate may not protect you against weight rebound when a low-calorie diet plan, i.e. consuming less energy than you expend, is introduced. Physical exercise will help you to increase your BMR. Anaerobic activities, such as high-intensity interval training (HIIT), heavy weight lifting, sprinting (while running, cycling or swimming) may help since your BMR is higher when you have more muscle. Also, a balanced diet that includes increased consumption of fruit, vegetables, seeds and whole grains and reduced consumption of salt, fat and sugar will be beneficial for maintaining a healthy weight. For better nutritional monitoring and a personalized diet, it is essential to consult a healthcare professional.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
FABP2	rs1799883	CT	**Low**	Predisposition to decreased resting metabolic rate.
LEPR-4	rs2025804	AA	High	Predisposition to normal resting metabolic rate.

1.5 Weight loss capability during diet interventions

Since your DNA determines your hair and eye color and all of your features, it makes sense that your genes also play an essential role in your weight. Part of your ability to lose weight depends on your DNA, which is why everyone responds differently to diets and workouts. Each person's genes have a different level of influence on weight.

Some people's genes are responsible for 30% of their weight gain or loss, while others may be 80% responsible. But even if your genes have a great deal of control over your body weight, you can still avoid gaining weight by living a healthy lifestyle.

Whether you have struggled with a long-term weight problems or have only recently started battling weight gain, it's helpful to know whether the extra weight is due to your DNA or your lifestyle so that you can take a targeted approach to your problem. A genetic predisposition is not a diagnosis, but it may offer clues and insights into your situation that help you change your lifestyle to improve your health.

This category analyzes genetic predisposition to lose weight during dietary intervention: the faster the weight loss, the lower the chance of gaining weight and being obese.

Your result

- SLOW WEIGHT LOSS -

CATEGORY	DESCRIPTION
 **Weight loss capability during diet interventions**	You have a lower capacity for weight loss on diets which are designed for weight loss, which is when you eat fewer calories than you need. Before generating a personalized diet intervention, sodium, anxiety, physical performance, lipids and carbohydrate metabolism should be considered. In general, physical exercise and a balanced diet that contains all the nutrients you need will help you achieve your weight goals. Therefore, it is vital to consume foods from all food categories, like fruit and vegetables, grains and legumes, lean meat and eggs, dairy products and healthy fats, such as olive oil. Also, it is essential to drink enough water, about 35 to 40 ml/kg per day, and get enough sleep. It is recommended that you consult a healthcare professional for a personalized evaluation and diet, as well as for a physical exercise prescription.

MARKER	LOCUS	VARIANT	CAPABILITY	DESCRIPTION
ACSL5	rs2419621	CC	**Low**	Predisposition to slow diet-induced weight loss.

2.
Behavioural genetics in food intake

This category analyzes genes related to appetite, anxiety eating, satiety and our predisposition to snacking. All these factors are directly related to being overweight and obesity.

Nutritional information

Have you ever eaten more food because you were anxious, stressed or sad? Many people experience this alteration in food intake when they feel like that and many of them gain weight due to this behaviour.

This happens because food intake is regulated by many factors, including nervous system control, which controls our appetite, satiety and anxiety. All these factors may affect food consumption, which may lead to being overweight or obese. Therefore, some people who suffer from anxiety end up eating more food to compensate for this feeling. On the other hand, some people already have an increased appetite or decreased satiety, leading to weight gain.

Our body produces hormones that control our food intakes, such as ghrelin and leptin. Ghrelin increases appetite, thus increasing food intake, while leptin reduces appetite, reducing food intake. Let's imagine that these hormones work like a traffic light system. The green light is ghrelin which allows food intake to start and the red light is leptin which stops food intake. Some people have a genetic alteration in these hormones, which leads to increased food intake.

Do not worry if you have this genetic alteration. Some strategies may help you avoid having a high food intake, such as mindful eating, drinking enough water, increasing fibre intake, physical exercise and a balanced diet containing plenty of vegetables, fruit and whole grains. Physical exercise and diet plans should be prescribed and coordinated by a healthcare professional based on your genes and health condition.

What is mindful eating and how do I use it?
Mindful eating means focusing on the present moment and accepting your feelings, thoughts and bodily sensations while eating a meal.

Some steps of mindful eating that you can apply to your routine are:

1. Eat when you have an appetite, but not when you are ravenously hungry. You should not skip meals. When you skip a meal, you may be so keen to eat that your priority is filling the void instead of enjoying your food.
2. Start with a small portion of food.
3. Appreciate the food or meal. Contemplate everything and every piece of food you are eating.
4. Try to feel all your senses when you are eating. As you chew your food, try identifying all the ingredients, flavours and foods.
5. Eat slowly.
6. Chew your food well so you can taste all the flavours.

These strategies may help you control food intake even if you have a high genetic risk of increased appetite or decreased satiety. However, we recommend that you consult a healthcare professional for personalized recommendations.

2.1 Appetite and anxiety risk

Have you ever eaten when you don't feel hungry? If you have, this was probably down to appetite and not hunger. Appetite is a desire to eat food, which is different to hunger, the body's biological response to a lack of food. A person can have an appetite even without hunger. In some situations, you may have an increased appetite because of anxiety.

Anxiety is a natural response of the body to stress. It is a feeling of fear or preoccupation about what is coming. Increased anxiety and appetite can increase food intake, which may lead to you being overweight or obese.
Lifestyle changes, such as improving sleep habits, increasing social support, using stress reduction techniques, e.g. meditation, and getting regular exercise, may help to reduce anxiety. However, you need to be patient since it may take some time before these changes affect your anxiety.

In addition to healthy approaches to nutrition, such as eating a balanced diet and drinking enough water, many other dietary considerations can help relieve anxiety.

For example, complex carbohydrates are metabolised more slowly and help maintain an increased blood sugar level, which makes you feel calmer. We recommend that you limit or avoid alcohol and caffeine, as this can make you feel jittery and affect sleep. Foods naturally rich in magnesium may also help, i.e. leafy greens, such as spinach, legumes, nuts, seeds and whole grains. Moreover, foods rich in zinc, such as oysters, nuts, liver, meats and eggs, have been associated with reduced anxiety levels.

However, if your anxiety is severe or interferes with your day-to-day activities or enjoyment of life, you may need to seek help from a healthcare professional. Some people have a genetic alteration that alters their appetite and anxiety. Therefore, these people may feel increased appetite and anxiety, leading to high food intake. This category analyzes the genetic risk of high appetite and anxiety related to food intake.

Your result

- INCREASED -

CATEGORY	DESCRIPTION
Appetite and anxiety risk	This result means you probably have a medium-high appetite dysregulation, which may lead to some level of anxiety regarding food intake. To reduce anxiety, you should include foods rich in magnesium, omega-3 fatty acids, probiotics and tryptophan. These nutrients help regulate the gut microbiota and increase serotonin production, which is the happiness hormone. These nutrients can be found in dairy products, chocolate, banana and nuts. In addition, it is also essential to reduce your consumption of foods rich in sugars and wheat flour since they may affect serotonin production. Physical exercise, as recommended by the guidelines for training, may help you reduce your stress. Also, it is recommended to limit alcohol and caffeine intake, which can make you feel jittery and nervous and interfere with sleep. Practising mindful eating, the steps of which are detailed above, drinking enough water, which is about 35 to 40 ml/kg per day, and getting enough sleep will also help.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
COMT	rs4680	GA	Medium	Increased risk of overeating.
NMB	rs1051168	GT	Medium	Increased risk of eating disinhibition that could result in increased body weight.
DRD2-1	rs1800497	GG	Low	No predisposition to emotional eating.
MC4R-1	rs2229616	CC	**High**	Predisposition to binge eating.
DRD2-2	rs6277	AA	**High**	Predisposition to binge eating.

2.2 Satiety: Feeling Full

What do you think makes you stop eating? Satiety is the feeling which causes that. Satiety is the feeling of fullness and the suppression of hunger for a while after a meal. An area of our brain, called the satiety centre, creates a sensation of fullness when it is stimulated. The satiety centre is stimulated when you eat and this sensation inhibits your hunger and the desire to eat. So, the higher your satiety, the lower your food intake and the lower your chance of gaining weight.

Some factors may affect satiety. Once we know about these factors, we can manage them to increase our satiety, thus reducing food intake.

Gastric stretching, which is the first satiety signal. After consuming a meal, the expanding stomach sends a message to the brain telling the body that it's full. You can stretch the stomach by drinking water or any liquid with your meal. Over time you will need more food to feel full, which means an increased food intake. Therefore, it is not recommended to drink liquids with a meal.

High-volume foods: eating high-volume foods can help you feel full longer than eating low-volume foods. High-volume foods are those with high water and dietary fibre content, such as fruit and vegetables. These foods increase gastric stretching, which can help you to feel full and satisfied.

Protein and fat: foods rich in protein and fat slow down digestion, so they may help people feel full after a meal. Fat is found in nuts, seeds, dairy products and animal products such as meat and poultry. In general, high-fat foods remain in the stomach longer than low-fat foods.

Also, the brain uses the amino acid tryptophan to produce serotonin, which makes us feel satisfied and relaxed. This is the reason why a high intake of foods containing tryptophan, such as turkey, dairy products, oats, chocolate and bananas, can promote satiety and sleepiness.

Another good strategy to increase satiety is mindful eating, which is detailed in the previous category.

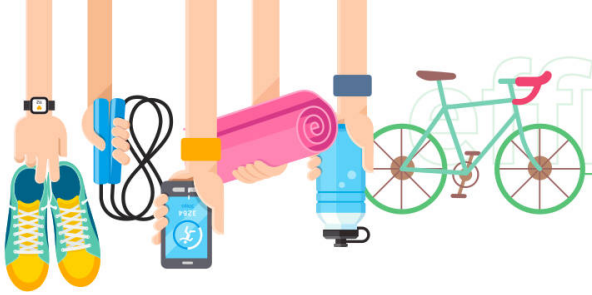
People who have a genetic alteration in the hormones that control satiety, such as leptin, may have a high food intake. This category analyzes the genetic risk of that.

Your result

- SLIGHTLY LOWER SATIETY -

CATEGORY	DESCRIPTION
Satiety: Feeling Full	This result means you probably have a somewhat reduced perception of satiety after eating. You should try to eat slowly to activate the satiety centre, which is the place in our brain responsible for controlling hunger and appetite. Regardless of the result, you can improve your satiety by practising mindful eating, the steps of which are detailed above, and drinking enough water, which is about 35 to 40 ml/kg per day.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
FTO-1	rs9939609	AT	Medium	Slight predisposition to diminished satiety. Increased risk of obesity.



3.
Efficacy of exercise

This category analyzes genes related to fat burn and control of cholesterol levels.

Nutritional information

If you want to feel good, have more energy and live a better life, you should exercise! You've probably already heard that. Regular exercise and physical activity have health benefits. Everyone may benefit from physical activity, regardless of their age, sex or physical ability.

Regular exercise also helps increase HDL, the "good cholesterol", and prevent or manage many health problems such as stroke, metabolic conditions, high blood pressure, type 2 diabetes, depression, anxiety and cancer. Moreover, physical activity may make you feel happier, more relaxed, less anxious and help you fall asleep faster.

Also, physical exercise can help to prevent excess weight gain or help maintain weight loss. Your physical exercise routine should be prescribed and coordinated by a healthcare professional based on your genes and health condition. When you engage in physical activity, you burn calories to fuel your workout. One of the sources of these calories is the lipids stored in the fatty tissue. Therefore, when you burn calories you can burn fat.

Even small amounts of physical activity are helpful and cumulative activity may provide health benefits throughout the day. A combination of vigorous aerobic exercise or moderate and vigorous activity may help to increase HDL cholesterol. Examples include running, walking or swimming.

It is recommended that you consult a healthcare professional before starting a new exercise programme, especially if you haven't exercised for a long time or have chronic health problems, such as heart disease.

Some people have different responses to practising the same physical exercise related to individual genetic predisposition. In this sense, some people can burn more calories and fat or increase HDL cholesterol by practising physical exercise while others cannot.

This category analyzes genetic predisposition to burn calories and increase HDL cholesterol by exercising.

3.1 Benefits from endurance exercise for improving HDL levels

Anyone who has looked for ways to increase their HDL cholesterol levels has probably been recommended exercise. This is because regular exercise, especially endurance exercise, is associated with higher HDL cholesterol levels. HDL cholesterol is considered "good" cholesterol because it transports the excess cholesterol from the walls of your arteries, decreasing cardiovascular risk.

Endurance exercise, such as walking briskly, running, jogging, dancing and biking, refers to training the aerobic system, which increases your heart rate and breathing for an extended period.

If you exercise at least three to four times per week for at least 20 minutes, this may help you increase your HDL levels. Increasing the duration of your exercise sessions by pacing yourself carefully may be the best way to translate exercise into higher HDL levels.

The effect of exercise on your HDL level often depends on your specific genetics. Therefore, some people find it easier to increase HDL with training while others do not.

This category analyzes genetic predisposition to being able to increase HDL cholesterol with physical exercise.

Your result

- VERY LOW EXPECTED BENEFITS FROM EXERCISE -

CATEGORY	DESCRIPTION
Benefits from endurance exercise for improving HDL levels	**Very low expected benefits from exercise** mean that endurance exercise alone will not improve HDL levels. Also, you can increase your HDL level by losing weight. For every 2.7 kg lost, HDL may increase by 1 mg/dl. Choosing healthier fats, such as the monounsaturated and polyunsaturated fats found in olive, peanut and canola oils as well as nuts, fish and other foods containing omega-3 fatty acids, like salmon, tuna, sardines and flaxseed oil may also help. Regardless of the outcome, an active lifestyle is also recommended. Moreover, you should consume alcohol in moderation, less than 3-5 drinks per week.

MARKER	LOCUS	VARIANT	BENEFIT	DESCRIPTION
PPARD	rs2016520	TT	**Low**	No predisposition to increase HDL cholesterol levels in response to endurance exercise.

3.2 Exercise to reduce body fat

Have you ever heard someone say that they need to work out to burn fat? But what is body fat?

Our body stores lipids in fatty tissue that is distributed throughout the body. So, when we say "body fat", we are talking about adipose tissue. But is adipose tissue harmful? The answer is YES and NO. NO, because adipose tissue is our energy store that can be used in the absence of food. Also, it is essential for hormone regulation, including the hormones that control fertility, vitamin absorption and temperature regulation. And YES because when there are excessive levels of adipose tissue, this may increase your risk of some diseases, like cardiovascular diseases, type 2 diabetes and cancer.

When you eat more calories than you need, your body will store the excess of these calories in the fatty tissue, thus increasing the amount of fatty tissue you have. Also, a diet rich in inflammatory foods, such as refined carbohydrates, like white bread and pastries, fried foods, soda and sugar-sweetened beverages, red meat and processed meat, like sausages and bacon, margarine, shortening and lard can increase inflammation in the body, which may lead to weight gain.

Can you tell if you have healthy body fat? Body fat percentage is a measurement of body composition that tells you how much of your body weight is fat. An excellent body fat percentage for women is up to 31% and up to 24% for men. Reducing your body fat is a perfect strategy to reduce your risk of disease. In order to do that, you can change your diet, start an exercise programme or combine both methods.

When you engage in physical activity, you burn calories to fuel your workout. One of the sources of these calories is the lipids stored in the fatty tissue. Therefore, when you burn calories you can burn fat.

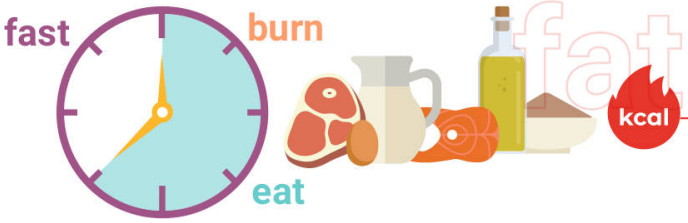
This category is related to the body's response to burning fat during physical exercise. Physical exercise mobilises the fat stored in the adipose tissue to provide energy for physical work, reducing body fat.

Your result

- MEDIUM-HIGH EXPECTED BENEFIT FROM EXERCISE -

CATEGORY	DESCRIPTION
Exercise to reduce body fat	This result means that exercise as the only strategy may be an excellent way to lose weight. If you combine physical exercise, as recommended by the guidelines for exercise, with nutritional counselling, you may get better results. Regardless of your outcome, it is vital to maintain a balanced diet to avoid gain weight. In order to do this, you should reduce your consumption of inflammatory foods, such as refined carbohydrates, like white bread and pastries, fried foods, soda, red meat, sausages and bacon, margarine, shortening and lard. And it is recommended to increase consumption of foods that fight inflammation, like olive oil, green leafy vegetables, nuts, fatty fish like salmon, mackerel, tuna, sardines and fruit.

MARKER	LOCUS	VARIANT	BENEFIT	DESCRIPTION
FTO-1	rs9939609	AT	Medium	Slight predisposition to lose fat during physical exercise.
FTO-2	rs1121980	AG	Medium	Predisposition to lose fat slowly during physical exercise.
LIPC	rs1800588	CT	Medium	Slight predisposition to benefit from physical exercise to increase HDL cholesterol levels.
LEP	rs7799039	GG	High	Predisposition to low response to exercise-induced fat loss.



4.
Fat metabolism

This category analyzes genes relating to lipid metabolism and its use for providing energy.

Nutritional information

Lipids can be used to provide energy, our fuel, to our body or be stored to be used later. Fatty acids are a lipid compound that gives power to our body. Fatty acids can be classified as saturated or unsaturated. Saturated fat can be found in animal fat, high-fat meat, butter, whole milk and dairy products. Unsaturated fat can be found in vegetable oils, like olive oil and soya oil, as well as nuts and avocado. In general, unsaturated, monounsaturated and polyunsaturated fats are the healthiest fats.

There is a common misconception that all fat is bad but that is not true. Lipids are an essential nutrient for the body. So we need to make sure we get them in our diet. Lipids are crucial for regulating temperature, balancing hormone levels, reproductive health, vitamin storage and good neurological function.

However, if we consume more lipids than we burn, the lipids will be stored in our fat tissue, which could be a problem. So, for good health, it essential to eat the amount of lipid that our body needs and choose healthier foods, such as monounsaturated fats (MUFAs) and polyunsaturated fats (PUFAs). These lipids can improve our immune system and reduce cardiovascular risk by lowering LDL and increasing HDL cholesterol.

4.1 Response to monosunsaturated fats (MUFAs)

Monounsaturated fat is a type of dietary fat that is a healthy fat. Monounsaturated fatty acid intake may help to reduce your risk of heart disease. For instance, MUFAs may reduce your total and low-density lipoprotein (LDL) cholesterol levels but maintain your high-density lipoprotein (HDL) cholesterol level, thus reducing your cardiovascular risk. This healthy fat can be found in foods like avocados, olive oil, nuts and peanuts.

Replacing less healthy fats, such as saturated fats, which are found in fatty meat, whole milk, dairy products and animal fat, with unsaturated fats, such as MUFAs and polyunsaturated fats, may offer the health benefits mentioned above.

All fats, including MUFAs, are high in calories so only use MUFAs in moderation. Consume MUFA-rich foods instead of other fatty foods, not in addition to them. If you consume too much fat, even MUFAs, you can gain weight.

Some people also have a genetic alteration that affects MUFA metabolisation. These people may have a low capability of metabolising MUFAs, which may lead to gain weight. This category provides information about MUFA metabolisation efficiency. In other words, the higher response to MUFAs, the higher the metabolisation will be.

Your result

- VERY LOW MUFA METABOLISM -

CATEGORY	DESCRIPTION
Response to monosunsaturated fats (MUFAs)	This result means that if you consume an excessive amounts of MUFAs, you will probably gain weight due to fat accumulation. So, you should consume as few MUFAs as possible and avoid all foods rich in this fatty acid, like avocado, olive oil, nuts and peanuts. You may consume polyunsaturated fat foods instead, such as vegetable oils from olive, soy and flaxseed, as well as salmon, nuts and seeds. It is recommended that you consult a healthcare professional for a personalized evaluation and diet.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
ADIPOQ	rs17300539	GG	**Low**	No predisposition to reduce BMI and decrease obesity risk in response to monounsaturated fatty acids (MUFA) intake.

4.2 Response to polyunsaturated fats (PUFAs)

Polyunsaturated fat is also a type of dietary fat, which is considered healthy fat. Some studies have shown that PUFAs may reduce the LDL cholesterol, the "bad cholesterol". It also reduces inflammation in the body, which may reduce the risk of cardiovascular diseases, obesity, type 2 diabetes and cancer. Moreover, some of them are essential to minimise the risk of mental disorders, such as depression, bipolar disorder, schizophrenia, dementia, attention deficit/hyperactivity disorder and body inflammation.

Polyunsaturated fats include omega-3 and omega-6 fats, which are essential fatty acids that the body needs for brain function and cell growth. Our bodies are not able to produce them, so we need to take them from our diet. They can be found in vegetable oils, such as olive, soy and flaxseed oils, as well as salmon, nuts and seeds.

In the same way, some people have a genetic alteration that affects PUFA metabolisation. These people may have a low ability to metabolise PUFAs, which may lead to weight gain.

This category gives us information about the efficiency of metabolising PUFAs. In other words, the higher response to MUFAs, the higher the metabolisation will be.

Your result

- FAST PUFA METABOLISM -

CATEGORY	DESCRIPTION
Response to polyunsaturated fats (PUFAs)	This result allows you to eat foods which are high in PUFA fats on a daily basis without the risk of gaining weight. Foods rich in PUFAs are recommended, such as vegetable oils from olive, soy and flaxseed and salmon, nuts and seeds. However, you should not exceed the amounts that you need. Otherwise, you may gain weight. For a personalized diet and recommendation, you should consult a healthcare professional.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
PPAR-Y	rs1801282	CC	High	Predisposition to improve lipid profile (LDL and total cholesterols) and reduce BMI in response to a PUFA-rich diet.
FADS1	rs174547	CT	Medium	Age-related predisposition to slightly reduced PUFA biosynthetic capacity and lower plasma omega 3 concentration.

4.3 Response to fat intake to improve the HDL levels

Removing cholesterol from the arteries is an essential component in the prevention of cardiovascular disease. HDL cholesterol is considered "good" cholesterol because it transports the excess cholesterol from the walls of the arteries to the liver. In the liver, the excess cholesterol from HDL is metabolised and much of it is converted to bile, which is then excreted by the body or used for digestion. Imagine that excess cholesterol is like waste and the waste collection vehicle is HDL. In this analogy, the collection vehicle (HDL) collects the excess waste (cholesterol) and takes it to the recycling centre. Therefore, a high HDL cholesterol level often means that a lot of extra cholesterol is recycled, which is good.

High HDL levels reduce your risk of heart disease, whereas low levels increase the risk. Your type of diet may affect the HDL level. For instance, a low-fat diet may sometimes increase HDL levels, while a high-fat diet may increase LDL levels. But this effect of diet on the lipid blood level also depends on the individual genetic predisposition. Therefore, for some people, a low-fat diet is efficient at increasing HDL levels while it may not be that efficient for other people. This category analyzes your predisposition to have reduced HDL levels and tells you if a low-fat diet is an excellent strategy to regulate cholesterol levels.

Regardless of the result, it is suggested that you get your blood lipid levels checked regularly. Therefore, you should consult a healthcare professional for a personalized evaluation and diet.

Your result

- MEDIUM-HIGH EXPECTED BENEFITS -

CATEGORY	DESCRIPTION
Response to fat intake to improve the HDL levels	A low-fat diet will increase your HDL levels. Therefore, you should incorporate more lean protein into your diet, such as chicken, fish, soy, beans, peas and lentils. Moreover, you can increase your HDL level by taking physical exercise at least three to four times a week for at least 20 minutes and reducing your alcohol consumption to less than 3-5 drinks per week. It is also helpful to lose weight as, for every 2.7 kg you lose, your HDL may increase by 1 mg/dl and increase your consumption of foods rich in omega-3, such as salmon, tuna, sardines and flaxseed oil, as this may help you to improve your HDL level.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
LIPC	rs1800588	CT	Medium	Slight predisposition to improve HDL cholesterol levels in response to low fat diet.

5.
Carbohydrate metabolism

This category analyzes genes related to carbohydrate metabolism, starch metabolisation and sensitivity to carbohydrate-rich food. In addition, it analyzes the effect of carbohydrate intake in the regulation of cholesterol levels, LDL and HDL.

Nutritional information

Carbohydrate is the primary energy source for our body, mainly because some tissue, such as the brain, only uses glucose, a simple carbohydrate, as fuel. Although the brain represents less than 2% of our body weight, it uses up to 20% of the body's total energy from glucose. Therefore, carbohydrate is a vital nutrient for protecting our health. Nevertheless, excess carbohydrates are stored as lipid in the fatty tissue, so you may gain weight if you eat more carbohydrates than you need.

The difference between them is in the chemical structure and how quickly they are absorbed and digested in our bodies. Carbohydrates are classified as simple or complex. In general, simple carbohydrates are digested and absorbed more rapidly and efficiently than complex carbohydrates. When a carbohydrate is quickly and easily absorbed and metabolised in our body, it may quickly increase blood glucose.

Some carbohydrate-rich foods, such as sugar and sugary foods, sugary soft drinks, white bread, potatoes and white rice, have a high capacity to increase blood glucose quickly. This capability of food to increase blood glucose is called the glycaemic index (GI). Therefore, the higher the GI food intake, the higher the risk for blood glucose alterations. In this regard, foods can be classified based on their (GI) and they can have a low, medium or high GI. High GI foods include white bread, rice, pasta, soft drinks, watermelon and potato. Medium GI foods include wholewheat bread, oatmeal, banana, papaya, pineapple and plums and low GI foods include milk, vegetables, brown rice, oat bran, beans, soya, grapes and peaches.

Increased carbohydrate consumption, as well as unrefined sugars and starches with a high glycaemic index (GI), may increase your LDL levels and risk of developing type 2 diabetes.

Therefore, for a balanced diet and to maintain good health, it is recommended to increase your consumption of medium and low GI foods and reduce your high GI food consumption. However, it is possible to eat high GI food and not raise your blood glucose levels too much. In order to ensure this, you should eat other foods that are rich in protein, lipids or fibre along with high GI food. These nutrients will reduce glucose absorption. These foods may be meat, legumes, beans, dairy products, oat and whole grains.

Although the absorption and digested process of carbohydrates are the same in humans, some people may have genetic modifications in the carbohydrate metabolism, which alter the metabolization of this macronutrient. Such people may present a greater extraction of energy from carbohydrates, which can lead to weight gain. Also, some studies have shown that the alteration in the carbohydrate metabolization may affect the cholesterol levels, increasing LDL or decreasing HDL levels. The consequences of the carbohydrate alterations may be overweight, increased blood glucose, increased cholesterol, and triglyceride levels.

5.1 Capability to digest starchy food

This category provides us with information on our ability to digest starch from food. Starch is a complex carbohydrate present in various foods, such as potato, bread and pasta. There is an enzyme, amylase, that catalyses the hydrolysis of starch into sugars. These sugars are absorbed in the intestines and go into the bloodstream, which takes them to the target tissues, like the liver, muscle, heart and brain.

Any alteration in amylase can reduce starch digestion, increasing energy extraction from carbohydrates and leading to weight gain. In this case, a high carbohydrate diet may lead to you being overweight. If starch is not processed correctly, its consumption should be reduced. So this section analyzes genetic ability to digest starch.

Your result

- INCREASED STARCH DIGESTION -

CATEGORY	DESCRIPTION
Capability to digest starchy food	This result means that you are likely to have increased expression of the enzyme amylase, which increases your ability to digest the starch from food, such as potato, bread, pasta, rice and cookies. Therefore, you can incorporate starchy foods into your diet without affecting your weight loss. Despite this, maintaining a balanced diet and increasing your consumption of high fibre foods, such as whole grains, fruit and vegetables, will be beneficial.

MARKER	LOCUS	VARIANT	CAPABILITY	DESCRIPTION
AMY1-AMY2	rs11577390	CT	Medium	Predisposition to slightly increased expression of the amylase gene which is likely to enable more efficient starch digestion.
AMY1	rs4244372	TT	High	Predisposition to increased expression of the amylase gene which is likely to enable more efficient starch digestion.

5.2 Refined carbohydrate sensitivity

This category analyzes sensitivity to refined carbohydrates. Refined carbohydrates are forms of sugars and starches that do not exist in nature. They come from whole natural foods, but they have been processed to "refine" them by the food industry. Refined carbohydrates include maple syrup, corn syrup, white wheat flour, white rice, polished rice, corn starch, potato starch and all foods that contain these ingredients.

People who are sensitive to carbohydrates may store more calories from refined carbohydrates than normal. This happens because the connection between carbohydrates and insulin does not work properly. Insulin is a hormone that helps transport glucose, a small carbohydrate molecule, into cells. The connection between carbohydrates works like this: imagine you want to get into your house through the front door, so you need the key to open the door and go in. Glucose is you, the cell is the door and insulin is the key that allows you (glucose) to enter. Once it is inside the cell, glucose can be stored, used later or can produce energy for the body.

Another critical question to consider is the GI since many of the foods have high GI levels. Therefore, people who are sensitive to carbohydrates may have an increased effect when eating refined foods, which may increase LDL levels and the risk for type 2 diabetes.

To reduce this effect, we recommend increasing your consumption of medium and low GI foods and reducing your consumption of high GI foods. Also, you should eat other foods rich in protein, lipids or fibre along with high GI foods. The presence of these nutrients will reduce glucose absorption, which may lower blood glucose. These foods may be meat, legumes, beans, dairy products, oat and whole grains. Therefore, higher carbohydrate sensitivity means a higher risk of gaining weight.

Your result

- NORMAL CARBOHYDRATE SENSITIVITY -

CATEGORY	DESCRIPTION
Refined carbohydrate sensitivity	This result means that you probably extract energy from carbohydrates in a normal manner. Therefore, you can incorporate some refined carbohydrates into a balanced diet without affecting your weight. Despite that, if you reduce your consumption of high GI food, such as white bread, rice, pasta, soft drinks, watermelon, maple syrup and potatoes, and increase your consumption of low GI foods, like milk, vegetables, brown rice, oat bran, beans, soya and nuts, you may improve your health. Also, you can eat other foods rich in protein, lipids or fibre along with the high GI food. The presence of these nutrients will reduce glucose absorption, which may lower blood glucose. These foods may be meat, legumes, beans, dairy products, oat and whole grains.

MARKER	LOCUS	VARIANT	SENSITIVITY	DESCRIPTION
FABP2	rs1799883	CT	Normal	Predisposition to normal sensitivity to refined carbohydrates.

5.3 Carbohydrates and HDL levels predisposition

Increased carbohydrate consumption, unrefined sugars and starches with a high glycaemic index (GI), such as white bread, rice, pasta, soft drinks, watermelon, maple syrup and potatoes, can increase LDL levels and reduce HDL. The increasing LDL and decreasing HDL is a profile that increases the likelihood of cardiovascular disease.

This category analyzes the risk of reducing HDL levels due to carbohydrate consumption. The increase in the carbohydrate may reduce the HDL levels.

Removing cholesterol from the arteries is an essential component in the prevention of cardiovascular disease. HDL transports the excess cholesterol from the walls of arteries to the liver. Therefore, if your HDL levels are low, you will have a greater risk of cardiovascular diseases.

Regardless of the result, it is suggested that you get your blood lipid levels checked regularly. Therefore, you should consult a healthcare professional for a personalized evaluation and diet.

Your result

- LOW RISK OF DYSREGULATION -

CATEGORY	DESCRIPTION
Carbohydrates and HDL levels predisposition	This result means that high carbohydrate consumption will probably not lead to cholesterol dysregulation. So, consuming a balanced diet that incorporates fibres, such as linseed, whole grains, fruit and oats, and reducing your consumption of starchy foods, like potatoes, bread, cakes, cookies, pasta and sugar, is not expected to decrease your HDL levels.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
KCTD10	rs10850219	CC	Low	Predisposition to normal HDL cholesterol levels.

5.4 Carbohydrates and LDL levels

Increased carbohydrate consumption, unrefined sugars and starches with a high glycaemic index (GI), such as white bread, rice, pasta, soft drinks, watermelon, maple syrup and potatoes, can increase levels of LDL by increasing plasma triglyceride concentrations. Triglyceride is the most common type of fat in the body. It stores excess energy from your diet. So, when you eat more carbohydrates than you need, your body will convert it to triglyceride. LDL transports triglyceride in the body. Therefore, increased triglycerides can lead to increased LDL.

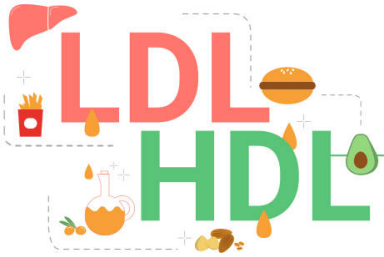
The increasing LDL and decreasing HDL is a profile that increases the likelihood of cardiovascular disease. This category analyzes the risk of increasing LDL levels due to carbohydrate consumption. The increase in carbohydrates may increase the LDL levels.

Your result

- LOW RISK OF DYSREGULATION -

CATEGORY	DESCRIPTION
Carbohydrates and LDL levels	This result means that high carbohydrate consumption will probably not lead to cholesterol dysregulation. Despite that, if you reduce your consumption of refined carbohydrates, like maple syrup, corn syrup, white wheat flour, white rice, polished rice, corn starch and potato starch, and incorporate more fibre into your diet, you may improve your health. Fibre can be found in foods like vegetables and fruit, whole grains and beans.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
MMAB	rs2241201	CC	Low	No predisposition to increase LDL cholesterol levels in response to high intake of carbohydrates.



6.
Lipid metabolism

This category analyzes genes related to alterations in serum lipids, such as LDL and HDL levels and triglyceride levels.

Nutritional information

LDL cholesterol, known as “bad cholesterol”, is broken down and excreted out of the body, whereas HDL, known as “good cholesterol”, is a molecule that carries LDL cholesterol out of the arteries and back to the liver. Triglycerides are the most common type of fat present in our body and they store the excess energy from our diet. A high triglyceride level combined with high LDL or low HDL is associated with fatty deposits on the artery walls, which increases the risk of cardiovascular diseases.

Serum lipid levels, such as LDL and HDL cholesterol and triglyceride, can be affected by diet and physical exercise. Your physical exercise and diet plan should be prescribed and coordinated by a healthcare professional based on your genes and health condition. However, genetic predisposition also determines a significant part of cholesterol and triglyceride levels.

For instance, despite following a balanced diet and exercise, some people regularly have a higher level of LDL and triglyceride and a reduced HDL level. Once we know about your genetic predisposition to have high or reduced serum lipid levels, you can follow a nutritional strategy that aims to improve your health-related lipid levels.

It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations. Based on your blood analysis, you are able to make changes to your lifestyle to improve your health.

6.1 Predisposition to reduced HDL levels

This category analyzes the main genes involved in a predisposition to higher or lower levels of HDL. HDL levels are determined by our genes by at least 50%, although environmental factors may also play a role. HDL carries cholesterol from your body back to your liver, removing the cholesterol from your body, reducing the fatty build-ups within the artery walls and reducing cardiovascular risk levels. Therefore, the lower your HDL levels, the higher your cardiovascular risk.

In the context of food intake, there is a type of fat that is powerful in raising LDL levels and that is trans fat. You have probably heard of it! It is created in an industrial process that adds hydrogen to liquid vegetable oils to make them more solid. It can be found in fried foods, doughnuts, cakes, pie crusts, biscuits, frozen pizzas, cookies, crackers, margarine and other spreads.

This type of fat is very harmful because it can increase LDL and reduce HDL levels. Moreover, all foods that contain trans fat have an inflammatory effect on our bodies. All these factors contribute to increased cardiovascular risk and the risk of having a stroke or heart attack.

This category analyzes the genetic predisposition to having a high HDL level. It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

Your result

- REDUCED HDL LEVELS -

CATEGORY	DESCRIPTION
Predisposition to reduced HDL levels	This result means that you probably have a reduced HDL level, leading to an increased cardiovascular disease risk. It would help if you took regular physical exercise, as recommended by the guidelines for training, since this may increase HDL levels. Moreover, you should reduce your consumption of foods containing high levels of saturated fats, such as animal fat, butter, high-fat meat, whole dairy products and processed foods that contain trans fat, such as fried foods, doughnuts, cakes, pie crusts, biscuits, frozen pizza, cookies, crackers and margarine and other spreads. You should also increase your consumption of foods containing monounsaturated fats, such as avocado, olive oil, almonds, cashews and peanuts.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
APOA5	rs662799	AA	Low	Predisposition to normal levels of HDL cholesterol.
CETP	rs5883	CC	**High**	Predisposition to decreased HDL cholesterol levels.

6.2 Predisposition to increased levels of triglycerides

Triglycerides are a type of lipid found in our blood. When we eat, our body transforms the calories that it does not use into triglycerides and stores them in our fat cells. When we fast, triglycerides are released to supply the energy that our body needs. Let's say that you regularly eat more calories than you burn, particularly from high-carbohydrate foods, such as bread, cookies, cakes, potato, rice, pasta and sugar. In that case, you may have high levels of triglycerides. This high triglyceride level may increase your cardiovascular risk and risk of liver disease.

On the other hand, increasing your fibre-rich food intake, such as vegetables, whole grains and fruit, may reduce carbohydrate absorption, which may decrease your triglyceride level.

It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

This category analyzes genetic predisposition to have a high level of triglycerides.

Your result

- HIGHLY INCREASED TRIGLYCERIDES -

CATEGORY	DESCRIPTION
Predisposition to increased levels of triglycerides	This result means that you are likely to have an increased triglyceride level, leading to increased cardiovascular disease risk. You should reduce your consumption of foods rich in carbohydrates, such as pasta, rice, bakery products, potatoes and corn products, and increase your fibre consumption, such as linseed, whole grains, fruit, oats, beans, lentils, and your unsaturated fat intake, e.g. olive oil, seeds, nuts, avocado, soy and peanuts. Incorporating foods rich in omega-3 fatty acids, such as salmon, tuna, sardines and flaxseed oil, may also help. Also, regular physical exercise, as recommended by the guidelines for training, will be beneficial.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
PPAR-Y	rs1801282	CC	**High**	Predisposition to increased levels of triglycerides.

6.3 Predisposition to increased oxidation of LDL

You can produce high levels of oxidised LDL if you have excessive free radicals in your body or high LDL cholesterol levels. Interestingly, compounds that can generate free radicals can be found in our food, like fried foods, alcohol and processed meat (sausages, bacon, ham and salami).

LDL oxidation occurs when this cholesterol particle reacts with free radicals in your body, turning into oxidised LDL. Free radicals are unstable molecules that can react with many compounds, including LDL cholesterol, causing damage and diseases. LDL oxidation is one of the earliest events in atherosclerosis, a hardening and narrowing of the arteries. This process reduces blood flow because the arteries are blocked, increasing the risk of a heart attack or stroke.

Consuming antioxidant foods, such as tangerine, pomegranate, citrus fruits, papaya, pineapple, grapes and olive oil, reduces LDL oxidation. This is because these foods have antioxidant compounds, like vitamin C and vitamin E, which inhibit the oxidation process. On the other hand, high fat intake may increase LDL levels and inflammatory molecules, increasing LDL oxidation.

This category analyzes genes related to a greater predisposition to oxidise LDL. It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

Your result

- HIGHLY INCREASED LDL OXIDATION -

CATEGORY	DESCRIPTION
Predisposition to increased oxidation of LDL	This result means that you probably have increased LDL oxidation, which is associated with a high atherosclerosis risk. Lowering your LDL levels will be beneficial. Therefore, you should reduce your consumption of foods which are high in saturated fat, like animal fat, butter, high-fat meat and whole dairy products, and increase your consumption of MUFA-rich foods, such as avocado, olive oil, almonds, cashews and peanuts, and foods containing fibre, like whole grains, vegetable, fruit and oats. As the guidelines recommend for training, regular physical exercise will be beneficial for reducing LDL levels. You should check your blood levels of lipids regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
APOB-2	rs676210	GG	**High**	High predisposition to increased LDL oxidation.

6.4 Risk of increased cholesterol LDL levels

LDL is considered the "bad" cholesterol and transports cholesterol particles throughout your body. LDL cholesterol builds up in the walls of your arteries, making them hard and narrow, increasing your risk of having a heart attack or stroke.

Trans fat is a type of fat that is powerful when it comes to raising LDL levels. You have probably heard of it. It is created in an industrial process that adds hydrogen to liquid vegetable oils to make them more solid. It can be found in fried foods, doughnuts, cakes, pie crusts, biscuits, frozen pizzas, cookies, crackers, margarine and other spreads. This type of fat is very harmful because it can increase LDL and reduce HDL levels, increasing cardiovascular risk and the risk of having a stroke or heart attack.

This category analyzes genes related to the risk of having high LDL cholesterol levels in your body, associated with cardiovascular risk. It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

Your result

- HIGHLY INCREASED LDL LEVELS -

CATEGORY	DESCRIPTION
Risk of increased cholesterol LDL levels	This result means that you probably have a high LDL level, leading to increased cardiovascular disease risk. You should reduce your consumption of foods containing high levels of saturated fats, such as animal fat, butter, high-fat meat, whole dairy products and processed foods that contain trans fat, such as fried foods, doughnuts, cakes, pie crusts, biscuits, frozen pizza, cookies, crackers and margarine and other spreads. You should also increase your consumption of unsaturated fat, such as vegetable and olive oil, nuts, peanuts, macadamia nuts and fish, and fibre-rich foods such as linseed, whole grains, fruit, oats, beans and lentils. Regular physical exercise, as recommended by the guidelines for training, will also help. You should check your blood levels of lipids regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
CELSR2	rs12740374	GT	Medium	Increased predisposition to lower LDL cholesterol levels.
HNF1A	rs2650000	AA	**High**	Predisposition to increased LDL cholesterol levels.
LDLR	rs6511720	GG	**High**	High risk of increased LDL cholesterol levels.
ABCG8	rs6544713	TT	**High**	High risk of increased LDL cholesterol levels.

6.5 Risk of unbalanced Triglycerides/HDL ratio

The TG/HDL ratio indicates the amount of both lipids in the bloodstream. The higher the triglyceride concentrations and the lower the HDL, the worse the TG/HDL-c ratio and the higher the cardiovascular risk.

Your TG/HDL ratio is calculated based on your fasting lipid profile. To find out your TG/HDL ratio, you should divide your triglyceride level by your HDL level: the closer the result is to 1, the better. For example: TG = 120 mg/dl and HDL = 40 mg/dl. 120 divided by 40 = 3.0. This result indicates an elevated risk of having a heart attack or stroke.

Low TG/HDL is desirable, especially <3. A high TG/HDL, especially >3, indicates a significant risk of having a heart attack or stroke.

It is essential to highlight that it is recommended that you get your blood lipid levels checked regularly. In order to do so, you should consult a healthcare professional for blood tests and a personalized diet and recommendations. This category analyzes genetic predisposition to have an unbalanced triglyceride/HDL ratio.

Your result

- NORMAL TG/HDL RATIO -

CATEGORY	DESCRIPTION
Risk of unbalanced Triglycerides/HDL ratio	This result means that you are likely to have a normal TG/HDL ratio, which leads to a reduced cardiovascular risk. Also, you can increase your HDL level by losing weight. For every 2.7 kg lost, HDL may increase by 1 mg/dl. Choosing healthier fats, such as the monounsaturated and polyunsaturated fats found in olive, peanut and canola oils as well as nuts, fish and other foods containing omega-3 fatty acids, like salmon, tuna, sardines and flaxseed oil may also help. Regardless of the outcome, an active lifestyle and a balanced diet are also recommended. Moreover, you should consume alcohol in moderation, less than 3-5 drinks per week.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
HMGCR	rs3846663	CC	Low	Predisposition to normal triglyceride (TG) levels, and normal TG/HDL-c ratio.

7.
Flavour sensitivities

This category analyzes sensitivity to bitter, sweet and salty tastes associated with food intake.

Nutritional information

According to current knowledge, humans perceive at least five taste modalities: sweet, salty, sour, bitter and umami. Taste sensitives vary between individuals and this can influence food choice and therefore food intake. Inter-individual variations in taste perception may be due to environmental and physiological factors. The physiological factors that may affect taste include gender, age, genetics and ethnicity. And the environmental factors that may affect taste are health and health behaviour-related factors, such as smoking, weight, diseases and medication.

Taste sensitivity is how intensely you perceive different tastes and flavours. Overall taste sensitivity seems to be associated with sweet and salt intake, blood pressure, overeating, satiety or even a mild glucose dysregulation.

This means that flavour sensitivities affects how we think food tastes. It can therefore affect our food choices, which can affect our diet and lifestyle. For instance, a person who has a bitter taste sensitivity may not eat a particular vegetable because of the taste; this will limit their food consumption and may lead to a nutritional deficiency and increased consumption of salt or sweeteners, which may lead to weight gain and cardiovascular diseases.

7.1 Bitter taste sensitivity

The particular variation in taste sensitivity to bitter flavours has been associated with differences in preferences for and selection of bitter fruits and vegetables and sweet foods, added fats, spicy foods and alcoholic beverages.

The higher your bitter taste sensitivity, the higher your consumption of salt or sweeteners to mask the bitter taste, which may lead to a gain in weight, type 2 diabetes, obesity and cardiovascular diseases.

Your result

- NORMAL -

CATEGORY	DESCRIPTION
Bitter taste sensitivity	This result means that you probably have a normal or decreased perception of bitter tastes. Despite that, you may reduce the bitter taste of these foods by incorporating spices, like cinnamon or red spices, some acid, like lemon juice, vinegar or wine, or dairy products, such as yogurt or unsalted cheese, into your cooking instead of using salt. A balanced diet and an active lifestyle may help you to maintain good health.

MARKER	LOCUS	VARIANT	SENSITIVITY	DESCRIPTION
TAS2R38-1	rs1726866	AG	Normal	Predispositon to normal sensitivity to bitter taste.
TAS2R38-2	rs713598	GC	Normal	Predispositon to normal sensitivity to bitter taste.

7.2 Salt sensitivity

Salt sensitivity refers to changes in blood pressure levels in parallel to changes in salt intake. In many people, when salt intake increases, the excess amount is excreted by the kidneys or through sweat. However, in salt-sensitive individuals, this mechanism does not work correctly, leading to high blood pressure, which may increase the risk of heart attack, stroke, heart failure and kidney disease.

Your result

- MEDIUM-LOW SALT SENSITIVITY -

CATEGORY	DESCRIPTION
Salt sensitivity	This result means you are likely to have slightly increased salt sensitivity and a moderately increased blood pressure risk related to salt consumption. You should try not to exceed sodium/salt intake daily recommendations, which amounts to around one teaspoon of salt (6 g).

MARKER	LOCUS	VARIANT	SENSITIVITY	DESCRIPTION
ACE	rs4343	AG	Medium	Predisposition to increased salt sensitivity associated with increased risk of salt sensitive hypertension.

7.3 Sweet flavour preference

The preference for sweet tastes is innate and universal in humans. The desire to choose sweet foods is more intense during childhood and reduces in adolescence and adulthood, but our appetite for sweetness remains until old age. Despite that, some people have an increased desire to eat sweet foods due to their inability to perceive the sweet taste.

People with sweet flavour preferences will probably choose sweet foods, such as ice cream, sweets, cakes, sweet pies, sweetened beverages and soft drinks. These foods have a high amount of sugar so the increased intake will lead to a high sugar/glucose intake, which increases the risk of weight gain and blood glucose alterations. These alterations may lead to people being overweight or obese and type 2 diabetes.

Therefore, this category analyzes ability to perceive sweet tastes: the more significant the inability to taste sweet flavours, the higher the intake of sweet foods.

Your result

- NORMAL -

CATEGORY	DESCRIPTION
 Sweet flavour preference	This result means that you probably have a normal ability to taste sweet foods. So you are likely to have a good level of consumption of sweet foods. In this case, you may not have a problem maintaining a healthy weight since you will probably not consume large amounts of sugar.

MARKER	LOCUS	VARIANT	SENSITIVITY	DESCRIPTION
SLC2A2	rs5400	GG	High	No predisposition for preferring sugar-containing foods.

8.
Detoxification imbalances

This category analyzes genes related to the antioxidant system and capacity.

Nutritional information

Every day, our body is exposed to attacks from free radicals, which are unstable molecules that can damage our body. When this process becomes excessive, free radicals interact with a very wide range of cells in the body, thus generating oxidative stress, leading to cardiovascular diseases and cancer.

Fortunately, our body has an antioxidant defence to control the damage caused by free radicals. Let's imagine that our antioxidant defence system is like a regiment of soldiers fighting a battle. In this case, is the enemy is the free radicals. The problem is when the enemy is stronger than our troops, leading to us losing the battle. In this analogy, losing the battle means developing a disease, such as cancer, cardiovascular problems and inflammation, that contributes to the development of obesity.

The central stimuli for the excessive formation of these unstable molecules are UV radiation, pollution, stress, smoking and excessive alcohol consumption.

Moreover, the lower your consumption of antioxidant foods, such as vegetables and fruit, and the higher your consumption of processed foods, like bacon, sausages, ham, salami, processed cookies and cakes can increase oxidative stress. To reduce oxidative stress, it is essential to improve your antioxidant food intake and practice physical exercise, which should be prescribed and coordinated by a healthcare professional based on your genes and health condition.

8.1 Antioxidant capability

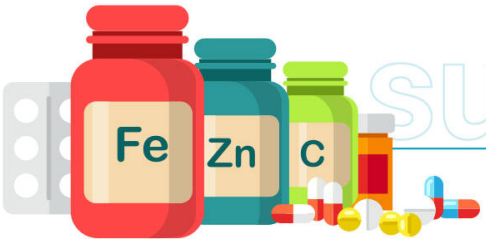
This category analyzes the main genes involved in human antioxidant capacity, which allows us to understand if you need additional help from specific supplements, such as vitamin C, lycopene, vitamin E, omega-3 and coenzyme Q10, or if your internal antioxidant mechanisms work properly. So, the your higher predisposition to reduced antioxidant capability, the higher your risk of cellular damage and the higher your need for supplements.

Your result

- SLIGHTLY REDUCED ANTIOXIDANT CAPABILITY -

CATEGORY	DESCRIPTION
 Antioxidant capability	This result means that you probably have a somewhat reduced ability to metabolise free radicals, which means you have a low risk of cellular damage. Despite that, consuming fruit, vegetables and vegetable oil on a daily basis is always beneficial since they are good sources of antioxidant compounds, such as vitamin C, lycopene, vitamin E and omega-3. As the guidelines recommend training, physical exercise also helps your body reduce oxidative stress.

MARKER	LOCUS	VARIANT	CAPABILITY	DESCRIPTION
GPX1	rs1050450	GA	Medium	Predisposition to slightly reduced hydrogen peroxide detoxification and increased oxidative damage.
NQO1	rs1800566	GG	High	Predisposition to normal NQO1 activity.
COMT	rs4680	GA	Medium	Predisposition to slightly reduced COMT enzyme activity resulting in a less efficient inactivation of neurotransmitters and catecholestrogens.
SOD2	rs4880	GG	**Low**	Predisposition to reduced hydrogen peroxide detoxification and increased oxidative damage.
CYP1B1	rs1056836	GG	**Low**	Predisposition to high CYP1B1 activity which could result in accumulation of carcinogenic products.
CYP1A1-2	rs1048943	TT	High	Predisposition to normal CYP1A1 enzyme activity.
GSTP1	rs1695	AG	Medium	Predisposition to slightly reduced GSTP1 activity leading to lower xenobiotic detoxification and increased susceptibility to oxidative stress.



9.
Supplementation

This category analyzes genetic predisposition to malabsorption or dysregulation of calcium, iron, selenium, magnesium and sodium.

Nutritional information

Minerals are essential to our body function. They help provide oxygen to muscles, create certain hormones, assist in carbohydrate, protein and cholesterol metabolism and thyroid regulation, which is necessary for average growth and immune function. Moreover, they are required to maintain the proper structure and function of bones and teeth and enzyme reactions, helping to maintain fluid balance. Our body cannot produce minerals. So we need to get them from our diets on a daily basis.

Mineral absorption can be affected by intrinsic and extrinsic factors. The outside elements are related to the presence of compounds that increase or decrease mineral absorption. For instance, vitamin C can increase iron absorption while caffeine, calcium and phytic acid reduce it.

On the other hand, vitamin D is essential for calcium absorption, whereas oxalic acid and caffeine can reduce it. Intrinsic factors are related to nutritional status, physiological state, such as pregnancy, and genetic predisposition.

Genetic predisposition is related to genetic alterations that affect the production of a protein involved in mineral absorption, metabolism or transport. In this case, people with these genetic predispositions have an increased risk of having nutrient deficiency. However, since the genetic results are not a diagnosis, it is recommended that you consult a healthcare professional to assess your blood tests to confirm any nutritional deficiencies and issue personalized prescriptions and diet plans.

9.1 Calcium malabsorption risk

Calcium is an essential mineral. It is essential for our bone formation, blood clot formation, muscle contractions and heart health. About 99% of the calcium in our bodies can be found in our bones and teeth.
Our bodies cannot produce calcium so we need to get it from our food. When we do not get the calcium our body needs, it is taken from our bones. This is OK once in a while, but bones get weak and more brittle if it happens too often.

Calcium food sources include dairy products, such as milk, yogurt and cheese, and certain green vegetables, e.g. broccoli, kale, cabbage and soya milk.

Calcium absorption is a critical factor in this mineral status. Therefore, calcium malabsorption can directly impact calcium levels and storage. Some compounds and nutrients can negatively or positively affect calcium absorption. In general, the presence of oxalic acid and phytic acid, which is found in wheat, oats, spinach, seeds and legumes, reduces calcium absorption and vitamin D increases its absorption.

Vitamin D is the essential nutrient that can positively affect calcium absorption. This vitamin can be found in some foods, such as dairy products, fatty fish and egg yolks, or it can be produced from direct sunlight on our skin and activated in its active form in our kidneys. If vitamin D production is affected in our body, calcium absorption may be affected as well. For instance, some people have a genetic alteration that reduces vitamin D activation in the body, which decreases calcium absorption, thus increasing the calcium deficiency risk.

Another critical factor that may affect our calcium levels in the blood is excretion of calcium. The kidneys excrete calcium and some compounds may increase its excretion, reducing the level of calcium we have in our blood. These compounds are salt, caffeine and phosphorus-rich foods, such as soft drinks and meat. Therefore, this category analyzes the genetic risk of calcium malabsorption due to lower levels of vitamin D. Thus, a high risk of malabsorption would require an increase in vitamin D intake.

Your result

- MEDIUM-LOW RISK OF CALCIUM MALABSORPTION -

CATEGORY	DESCRIPTION
Calcium malabsorption risk	This result means you are likely to have a genetic alteration in vitamin D metabolism, which leads to a medium-low risk of calcium malabsorption. In this case, you should increase your intake of calcium-rich food, such as dairy products and green vegetables, like broccoli, kale and cabbage. Also, you should increase your vitamin D level by increasing your vitamin D-rich food intake. Vitamin D can be found in dairy products, fatty fish, like salmon and sardines, and eggs. You should expose your skin to sunlight for 15-20 minutes on your face, arms, hands and legs without sunscreen.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
CYP2R1-1	rs10766197	AG	Medium	Predisposition to slightly reduced vitamin D levels and calcium absorption.
GC	rs2282679	GT	Medium	Predisposition to slightly reduced vitamin D levels and calcium absorption.

9.2 Predisposition to dysregulated calcium levels

Our body regulates the serum calcium concentration by a homeostatic mechanism involving some hormones, like a parathyroid hormone (PTH), calcitonin and vitamin D. So, when we do not get enough calcium from our diet, our body takes this mineral from the amounts it has stored to increase the serum concentration, thus maintaining the body's calcium balance. However, some people have a genetic alteration that changes this mechanism, increasing or decreasing calcium levels.

In addition to calcium and vitamin D consumption, vitamin K intake also affects blood calcium levels. Therefore, adequate consumption of vitamin K is essential for calcium metabolism and calcification of bones, preventing the calcification of blood vessels. This vitamin is found in green leafy vegetables, such as kale, spinach, turnip greens, parsley, green leaf lettuce, broccoli, cauliflower and cabbage.

This category analyzes predisposition to high or low plasma calcium levels. There is a risk of bone fractures in low calcium levels, while high ones may lead to vessel calcification.

Your result

- NO ADDITIONAL RISK OF DYSREGULATED PLASMA CALCIUM LEVELS -

CATEGORY	DESCRIPTION
Predisposition to dysregulated calcium levels	This result means you probably have an average calcium plasma level. Despite that, a balanced diet that includes food sources of calcium, such as milk, yogurt and cheese, dark green vegetables and vitamin D sources, such as dairy products, fatty fish and egg yolks, may help you avoid calcium deficiency.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
DGKD	rs1550532	GG	Low	Predisposition to normal serum levels of calcium.
CYP24A1	rs1570669	AA	**High**	Predisposition to reduced serum calcium levels and bone mineral density.
CASR-1	rs17251221	AA	Low	Predisposition to normal serum calcium levels.
CASR-2	rs1801725	GG	Low	Predisposition to normal serum calcium levels.
CARS	rs7481584	GG	Low	Predisposition to normal serum calcium levels
GCKR	rs780094	TC	Medium	Predisposition to slightly reduced serum calcium levels.

9.3 Risk of iron overload

Iron is a mineral that is essential for our body. It forms haemoglobin, a protein that transports oxygen from our lungs to the rest of our body. Also, it is crucial to our immune system. This means that we can develop anaemia without iron.

Usually, our intestines absorb just the right amount of iron from our food. However, some people have a genetically inherited condition that makes the body absorb too much iron from the food and store it in their organs, especially the heart, liver and pancreas. This condition is called haemochromatosis or iron overload. It may lead to life-threatening diseases, such as liver cirrhosis, heart problems, diabetes and cancer. Some signs and symptoms may include joint pain, abdominal pain, fatigue, weakness, memory fog, heart failure and liver failure.

This category analyzes genetic risk of having haemochromatosis. In this case, it is essential to reduce your iron-rich food intake and your consumption of any substances that may increase liver injury, such as alcohol. Also, it is necessary to check your iron blood level to evaluate your iron status and to adjust your diet.

Your result

- LOW RISK OF HEMOCHROMATOSIS -

CATEGORY	DESCRIPTION
Risk of iron overload	This result means you have no additional risk of iron overload. A balanced diet will help you avoid nutritional deficiencies.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
HFE	rs1800562	GG	Low	Predisposition to normal absorption of dietary iron.

9.4 Risk of low iron plasma levels

Iron is an essential mineral for our body. Iron deficiency may lead to anaemia, a condition which means that you lack enough healthy red blood cells to carry oxygen to your body. If you have anaemia, you may experience an irregular heartbeat, fatigue, weakness, dizziness, chest pain, cold hands and feet and headaches.

Iron is absorbed in our intestines and its absorption can be affected by intrinsic and extrinsic factors. The outside elements are related to the presence of compounds that increase or decrease iron absorption. For instance, vitamin C can increase iron absorption, while caffeine and phytic acid can reduce it. The intrinsic factors are related to your nutritional iron status, physiological state, like pregnancy, and genetic predisposition.

The genetic predisposition is related to genetic alterations that affect the production of a protein involved in iron absorption, metabolism or transport. In this case, people with these genetic predispositions have an increased risk of having low iron plasma levels, leading to iron deficiency.

To increase your iron plasma level, it is recommended to increase your vitamin C-rich food consumption, such as oranges, tangerines, lemons and iron-rich food consumption, like meat, eggs, milk and dairy products. On the other hand, reducing your phytic acid intake is recommended, e.g. by soaking or cooking phytic acid-rich foods, such as spinach, green vegetables and legumes. Therefore, this category analyzes the risk of having low blood iron levels.

Your result

- MEDIUM-LOW RISK OF DECREASED IRON LEVELS -

CATEGORY	DESCRIPTION
Risk of low iron plasma levels	This result means you probably have a certain level of risk of having lower iron levels but only when your iron intake is insufficient. You should incorporate foods with more bioavailable iron into your diet, such as red meat, chicken, pork, shellfish and meat products. Other good food sources of iron are tofu, legumes, seeds and nuts, spinach and green leafy vegetables. To increase iron absorption from these foods, you should add vitamin C-rich food, such as citrus fruits like oranges, tangerines and lemons, with your meal or straight after it.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
TF-1	rs3811647	AG	Medium	Predisposition to slighty increased serum ferretin and reduced serum iron levels.
TMPRSS6	rs4820268	AG	Medium	Predisposition to slightly reduced iron levels.
TF-2	rs8177253	CT	Medium	Predisposition to slightly increased total iron binding capacity.

9.5 Predisposition to dysregulated magnesium levels

Magnesium is an essential micronutrient. It contributes to carbohydrate metabolism, helps absorb and utilise calcium, maintains good bone health and contributes to hormones and the immune system. Since our body cannot produce this mineral, we must get it from our diet. Good food sources are leafy greens, seeds, beans, fish, whole grains, nuts, dark chocolate, yogurt, avocados and bananas.

The magnesium is absorbed in the intestines and its absorption can be reduced by some dietary compounds such as phytic acid. In addition, caffeine and alcohol may increase the excretion of magnesium. This means that these dietary factors can reduce magnesium levels in the blood.

In addition to the dietary factors, magnesium levels are also determined by several genes that control the absorption, excretion and reabsorption of magnesium from the diet. Some people have a genetic alteration in some of these genes, making them more susceptible to dysregulated magnesium levels.

Magnesium deficiency may cause memory loss, concentration loss, apathy, depression, confusion, hallucinations, paranoia, numbness, tingling, cramping, muscle weakness, tremor and arrhythmias. Excessive magnesium may cause drowsiness, laboured breathing, electrocardiogram abnormalities, hypotension, tiredness, nausea and vomiting. This category analyzes predisposition to dysregulation of magnesium levels.

Your result

- MEDIUM-HIGH RISK OF DYSREGULATED MAGNESIUM LEVELS -

CATEGORY	DESCRIPTION
Predisposition to dysregulated magnesium levels	This result means you probably have a medium risk of having dysregulated magnesium plasma levels. You should increase your consumption of magnesium-rich foods on a daily basis, such as dark leafy greens, seeds, beans, fish, whole grains, nuts, dark chocolate, yogurt, avocados and bananas. Avoid foods rich in phytic acid, like wheat, oats, spinach, seeds and legumes, since they can reduce magnesium absorption. You should also minimise your caffeine and alcohol intake. A professional may wish to evaluate your calcium, phosphorus, potassium and vitamin D levels since they are also related to bone health. It is recommended that you get the level of iron in your blood checked to evaluate your supplement needs and adjust your diet. If you have a high magnesium level in your blood, you should avoid magnesium-rich food. For that, you should consult a healthcare professional for a personalized diet and nutritional evaluation and recommendations.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
CASR-1	rs17251221	AA	Low	Predisposition to normal serum magnesium levels.
TRPM6	rs11144134	TT	**High**	Predisposition to lower serum magnesium levels.
SHROOM3	rs13146355	AG	Medium	Predisposition to slightly lower serum magnesium levels.
DCDC5	rs3925584	TT	Low	Predisposition to normal serum magnesium levels.
MUC1	rs4072037	CC	**High**	Risk of decreased serum magnesium levels associated with low kidney function measure (eGFR).

9.6 Predisposition to dysregulated selenium levels

Selenium is an essential micronutrient because it is an antioxidant enzyme. Our antioxidant system protects our body from the oxidative damage caused by free radicals. This mineral's tremendous antioxidant power helps prevent cancer, cardiovascular diseases, infections and inflammation since it strengthens the immune system. Also, selenium is essential to the function of the thyroid gland, which is why selenium deficiency causes this gland to malfunction, leading to diseases such as hypothyroidism.

External factors such as diet, supplements or smoking affect blood selenium concentrations and endogenous factors such as selenium storage, transport and excretion. Genetic factors can influence excretion. Therefore, some people may have a low selenium level due to genetic predisposition.

Although selenium deficiency is rare, when it occurs, it affects thyroid function and causes fatigue, difficulty concentrating and mood swings. The selenium deficiency may cause weight gain, stress, hair loss, brittle nails and skin, colds and recurring infections. This category analyzes genetic predisposition to having a dysregulated selenium level.

Your result

- NO ADDITIONAL RISK OF DYSREGULATED SELENIUM LEVELS -

CATEGORY	DESCRIPTION
Predisposition to dysregulated selenium levels	This result means you have no additional inherited risk of dysregulated selenium levels. A balanced diet will help you avoid nutritional deficiencies. Regardless of your result, you can increase your selenium level by increasing your consumption of selenium-rich foods on a daily basis, such as eggs, nuts, milk powder, oyster, mushrooms, peas, lentils, pork, beef, turkey, chicken and wheat flour.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
AGA	rs1395479	AC	Medium	Predisposition to slightly increased serum levels of selenium.
SLC39A11	rs891684	GG	Low	Predisposition to normal serum selenium levels.

9.7 Sodium sensitivity

Sodium is an essential mineral to health, regulating plasma volume and cellular transport. We can obtain enough sodium from the low amounts found in many foods, including fresh meat, fish and vegetables. However, when we eat more sodium than we need, it can increase blood pressure, leading to hypertension. This condition is defined as blood pressure over 140/90 mm Hg on two or more separate occasions and it is a significant risk factor for heart attacks, strokes, heart failure and kidney disease. But this relationship between sodium intake and blood pressure elevation is not exactly the same for everyone.

For instance, do you know someone who eats lots of salty food, like pizza, pickles and pretzels, but has naturally low blood pressure? They may be resistant to salt, which means their blood pressure does not rise significantly due to a high salt intake. In contrast, other people are sensitive to salt, which means their blood pressure increases if they switch from a low-sodium to a high-sodium diet.

Sodium sensitivity is when an increase in high sodium intake quickly increases blood pressure. On the other hand, when dietary salt intake is reduced, blood pressure decreases. It is important to emphasise that some individuals are sensitive to sodium while others are not. This category analyzes the risk of elevated blood pressure related to sodium intake.

Your result

- MEDIUM-LOW SODIUM SENSITIVITY -

CATEGORY	DESCRIPTION
Sodium sensitivity	This result means you are likely to have a moderately increased blood pressure risk due to salt consumption. You should try not to exceed daily recommendations for sodium/salt intake, which amounts to around one teaspoon of salt (6 g).

MARKER	LOCUS	VARIANT	SENSITIVITY	DESCRIPTION
ACE	rs4343	AG	Medium	Predisposition to increased sodium sensitivity associated with increased risk of sodium sensitive hypertension.

10.
Intolerance

This category analyzes genetic predisposition to the most common food and beverage intolerances, such as caffeine, alcohol, lactose and fructose.

Nutritional information

Have you ever noticed that some people feel unwell when they eat a particular food? Why does that happen? Sometimes it happens because these people have difficulty digesting certain foods, which leads to an inability to absorb nutrients or difficulty with this, which leads to extreme discomfort with several associated symptoms. This condition is called food intolerance, which is often confused with food allergy. They are, however, different!

A food allergy is an immune system response caused when the body considers an ingredient in food, usually a protein, to be harmful, creating a defence system, like antibodies, to fight it. Therefore, an allergic reaction occurs when the antibodies are battling a food protein. On the other hand, food intolerance is a digestive system response, which occurs when something irritates a person's digestive system or they cannot digest or break down the food.

It is important to note that food intolerances are mostly determined by our genes. In other words, people who suffer from some intolerance probably have a genetic alteration that affects the way their body responds to a food or ingredient.

A person who suffers from food intolerance will often experience discomfort, usually involving the digestive system, such as bloating, excess gas, stomach pain, diarrhoea, migraine, headaches, a runny nose and malaise, which is a general feeling of being under the weather. These symptoms usually occur a few hours after eating the food. And they can cause a lot of discomfort and negatively affect people's quality of life. The severity of the intolerance depends on the amount of the food the person eats.

The intolerance symptoms are mostly related to poor absorption of certain compounds present in foods. When our body does not digest and absorb these molecules, they remain in our gut, causing an intestinal imbalance and diarrhoea, or they can be used by gut bacteria, leading to gas, bloating and stomach pain. These symptoms are also often related to our gut integrity.

Our intestine has a barrier that protects us against the entry of microorganisms and food particles into our body, which may cause unwanted symptoms. This barrier is like a wall that does not allow strangers to enter our house and hurt us. However, when this wall is not built well or is broken down, these strangers cross the threshold and come into our house. In this analogy, the wall is our gut barrier, the strangers are the microorganisms and food particles and the house is our body. When this happens, our body releases inflammatory substances that cause other symptoms such as migraines, headaches, malaise and rashes. In genetically predisposed individuals, the release of these inflammatory substances is often abnormally high.

But how can our gut barrier or wall be broken? High sugar and alcohol intake, systemic inflammation, vitamin A and D deficiency and alterations in the gut microbiota can affect our gut barrier. The alteration of gut microbiota means increasing amounts of harmful microorganisms and decreasing beneficial microorganisms, which leads to an intestinal imbalance.

Regardless of food intolerance, some strategies should be adopted to avoid the symptoms and improve intestinal health. First, removing the food or ingredient that causes food intolerance reactions is essential, which depends on the food intolerance. After this, it is vital to improve the intestinal imbalance by increasing beneficial microorganisms and decreasing prejudicial microorganisms.

Also, it is recommended to reduce consumption of inflammatory foods, in other words, foods that break down the intestinal barrier (the wall), such as refined carbohydrates, like white bread and pastries, fried foods, fizzy drinks and sugary beverages, red meat and processed meat, like sausages and bacon, margarine, shortening and lard. And it is recommended to increase consumption of foods that fight inflammation, like olive oil, green leafy vegetables, nuts, fatty fish like salmon, mackerel, tuna, sardines and fruit.

10.1 Lactose intolerance risk

Lactose is a sugar found in milk and dairy products. Our body produces a digestive enzyme called lactase, which breaks down the lactose into glucose and galactose (simple carbohydrates). This digestive process is vital as it allows us to absorb glucose and use it as an energy source. However, in some people, lactase is not produced in a sufficient quantity. This means that their body is not able to break down lactose. When lactose remains in the digestive tract, it can be fermented by gut microorganisms causing spasms, stomach ache, bloating, diarrhoea and gas.

Lactose intolerance can negatively affect people's quality of life because of the uncomfortable symptoms and modifications required to their diet. The diet modification is about removing foods containing lactose, which makes your diet more restricted. These foods include milk and dairy products, as well as some processed foods. Therefore, reading the labels on processed foods is advised because many of these products contain lactose. Also, it is possible to use the enzyme lactase before consuming food containing lactose. Lactase will digest the lactose, thus reducing the intolerance symptoms.

The treatment of lactose intolerance is also essential to improve intestinal health since a healthy gut may improve intolerance symptoms. Taking prebiotic and probiotic supplements can be beneficial. Prebiotics are food compounds like soluble fibre, such as vegetables, legumes, peas, beans, apples, oats, onions, barley, banana and spinach, that help beneficial bacteria grow in the intestines. On the other hand, probiotics are live microorganisms that may have health benefits.

This category analyzes the genetic risk of having lactose intolerance. However, it is not a diagnosis. So, before starting any treatment, it is essential to consult a healthcare professional to get a diagnosis of lactose intolerance, to get a personalized diet, recommendations and advice on supplements.

Your result

- LOWER RISK OF LACTOSE INTOLERANCE -

CATEGORY	DESCRIPTION
Lactose intolerance risk	This result means you probably do not have lactose intolerance. You can consume all dairy products. Regardless of the result, it is crucial to improve your gut health. In order to do so, it is recommended to increase your consumption of prebiotic foods, for example, vegetables, legumes, oats, onions, barley and spinach, and foods that fight inflammation, like olive oil, green leafy vegetables, nuts, fatty fish like salmon, mackerel, tuna, and sardines and fruit. Also, it is recommended to reduce your consumption of inflammatory foods, such as white bread and pastries, fried foods, soda and sugar-sweetened beverages, red meat and processed meat, like sausages and bacon; margarine, shortening and lard.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
MCM6-1	rs182549	TC	Low	Normal predisposition to lactose tolerance.
MCM6-2	rs4988235	AG	Low	Normal predisposition to lactose tolerance.

10.2 Alcohol metabolism

The effects of the consumption of alcoholic beverages on different organs depend on the ethanol concentration and the duration of the alcohol consumption. Both of these variables are affected by ethanol absorption into the bloodstream and tissues and ethanol metabolism. The main site for ethanol metabolism is the liver, although some metabolism also occurs in other tissues and can cause local damage there.

Genetic alteration in proteins involved in alcohol metabolism may lead to toxic effects when it is consumed, such as facial redness, itchy skin bumps, worsening of pre-existing asthma, a runny or stuffy nose, low blood pressure, nausea, vomiting and diarrhoea. This condition is known as alcohol intolerance.

Regardless of the symptoms caused by this intolerance, high alcohol consumption levels are associated with various short-term and long-term health risks, including cardiovascular disease, cancer and liver diseases. The risk of these conditions increases with the amount of alcohol we drink. Like with some cancers, the risk increases at very low alcohol levels, which can be less than one unit. Therefore, the alcohol intake recommendation for adults is limited to 2 units or less per day for men and one unit or less per day for women. However, if you have alcohol intolerance then it is essential to avoid drinking alcohol. Removing alcohol from your diet is probably enough to prevent intolerance symptoms. However, if you have a severe reaction or severe pain, you should see a doctor.

This category analyzes genetic ability to metabolise alcoholic beverages.

Your result

- NORMAL ALCOHOL METABOLISM -

CATEGORY	DESCRIPTION
Alcohol metabolism	This result means you probably have a normal alcohol metabolism, which means normal alcohol toxicity.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
ALDH2	rs671	GG	High	Predisposition to normal alcohol metabolism.

10.3 Caffeine metabolism

Caffeine is a stimulant of the central nervous system. It is produced naturally in cocoa beans, kola nuts, coffee beans and tea leaves. People can metabolise caffeine in different ways and to different extents. Some have a slow metabolisation, while others have a fast metabolisation. One person can drink a triple shot of coffee without feeling jittery while others experience insomnia hours after drinking a small cup of coffee. Therefore, this category analyzes genetic predisposition to different degrees of caffeine metabolisation.

A slower metabolism means that caffeine will take longer to break down, making its effects more noticeable. This condition is called caffeine intolerance. There is a risk of experiencing anxiety due to over-consumption. On the other hand, a faster metabolism may increase caffeine consumption to obtain the same stimulant effects, as caffeine will be broken down rapidly.

People with a normal caffeine metabolism can consume 200 to 400 milligrams, two to four 5-ounce cups, daily without any adverse effects. However, it is not recommended that people consume more than 600 milligrams per day. On the other hand, people with caffeine intolerance experience an intense adrenaline rush when they consume it. They may feel as if they have had five or six cups of espresso after drinking only a few sips of regular coffee. Since these people metabolise caffeine more slowly, their symptoms may last for several hours. The symptoms can include a racing heartbeat, headache, nervousness or anxiousness, restlessness and insomnia. In this case, we recommending avoiding caffeine consumption.

It is important to remember that caffeine is found in other foods as well as coffee, such as cocoa beans and chocolate, green tea, chewing gum and energy drinks. Also, some medicines and supplements contain caffeine. So, for people with a caffeine intolerance, it is essential to read the labels of foods, supplements and medication to make sure they do not contain caffeine.

Your result

- SLOW CAFFEINE METABOLIZER -

CATEGORY	DESCRIPTION
Caffeine metabolism	You probably have a very slow caffeine metabolism speed, which means the caffeine will last longer in your body. So you should reduce your daily caffeine consumption. Caffeine is found in cocoa beans and chocolate, green tea, chewing gum and energy drinks. You can choose decaffeinated beverages. Also, you should read the labels on medication, supplements and food as many of them may contain caffeine.

MARKER	LOCUS	VARIANT	METABOLISM	DESCRIPTION
CYP1A1-1	rs2470893	CT	Medium	Increased predisposition to slower caffeine metabolism.
CYP1A2	rs762551	CA	**Low**	Predisposition to slow caffeine metabolism.

10.4 Fructose intolerance risk

Fructose is a sugar found in fruit, some vegetables, honey and processed food. It is absorbed in our intestines and converted into glucose in our bodies. This process is essential for supplying glucose to the body, which will later be converted into energy for our daily activities. However, some people have a genetic alteration that makes them unable to produce the enzyme that carries out this conversion. Therefore, they are unable to metabolise fructose. This condition is known as hereditary fructose intolerance. If people have this condition, after ingesting fructose they may experience nausea, bloating, abdominal pain, diarrhoea, vomiting and low blood sugar (hypoglycaemia). Without treatment, people with fructose intolerance may develop life-threatening complications, such as liver and kidney failure, due to the accumulation of fructose in the body.

Management

Managing fructose intolerance typically includes the elimination of fructose and sugar. These include fizzy drinks, certain cereal bars, certain fruits, such as prunes, pears, cherries, peaches, apples, plums and watermelon, apple juice and apple cider, pear juice, sugar snap peas, honey, desserts such as ice cream, sweets and cookies containing fructose sweeteners.

Also, some processed foods and medicines may contain fructose. Therefore, it is essential to read their labels. Take care to avoid the following: high fructose corn syrup, agave nectar, crystalline fructose, fructose, honey, sorbitol, fructo-oligosaccharides (FOS), corn syrup solids and sugar alcohols.

A fructose-free diet may cause vitamins deficiency, such as complex B vitamin and vitamin C deficiency, since this kind of diet severely reduces fruit and vegetable consumption. Therefore, people following this diet may need supplements.

This category analyzes genetic risk of having fructose intolerance. However, it is not a diagnosis. So, before starting any treatment, it is essential to consult a healthcare professional to get a diagnosis of fructose intolerance, a personalized diet, recommendations and supplements.

Your result

- LOWER RISK OF FRUCTOSE INTOLERANCE -

CATEGORY	DESCRIPTION
Fructose intolerance risk	You probably have a low risk of fructose intolerance. In this case, a balanced diet that includes consumption of fruit, vegetables and whole grains and decreasing your consumption of processed foods, such as snacks, crisps, bacon, sausages, ham, salami, processed cookies and cakes, and foods which are high in sugar, like desserts, sweets and soft drinks, will help you to maintain good health and avoid nutrient deficiencies. Also, as part of a balanced diet, it is essential to drink enough water, around 35 to 40 ml/kg per day, and get enough sleep.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
ALDOB-1	rs1800546	CC	Low	No predisposition to develop hereditary fructose intolerance.
ALDOB-2	rs76917243	GG	Low	No predisposition to develop hereditary fructose intolerance.

11.
Vitamin deficiency risk

This category analyzes genetic risk of metabolism deficiency or low plasma level of vitamins, such as vitamin A, D, E, C, B6, B12 and B9.

Nutritional information

I bet you've heard people say “I need to take vitamins to improve my immunity” or “I need to take vitamins to my hair stop falling out”. Well, this is due to some of the functions of vitamins. But what are vitamins? Vitamins are nutrients that people need in small quantities and they need to come from food because people either do not produce them or only produce a minimal amount.

Therefore, these things people say are accurate since vitamins play a vital role in the immune system and cell growth. In addition, vitamin functions include energy production, eye health, brain health and the metabolisation of protein, carbohydrate and lipids in our body.

There are currently 13 compounds recognised as vitamins, divided into water-soluble vitamins, such as B vitamins and vitamin C, and fat-soluble vitamins, like vitamins A, D, E, and K. Always remember that good health is essential to get all these vitamins.

When we do not get enough vitamins from our diet or cannot absorb them in our intestines, we can develop vitamin deficiency. Vitamin deficiency can be classified as a primary deficiency due to a lack of dietary vitamin intake and a secondary deficiency due to an underlying disorder such as malabsorption.

Secondary vitamin deficiency is often caused by a genetic alteration that reduces the proteins involved in vitamin absorption and metabolisation. Therefore, some people who have this genetic predisposition may have a vitamin deficiency.

Vitamin deficiency can cause a variety of symptoms, depending on the type of vitamin in which people are lacking. Some signs of vitamin deficiency may, as a general rule, include brittle hair and nails, mouth ulcers or cracks at the corners of the mouth, bleeding gums, poor night vision and white growths on the eyes, scaly patches, dandruff and hair loss.

This category analyzes genetic risk of having a vitamin deficiency. However, it is not a diagnosis. So, before starting any treatment, it is vital to consult a healthcare professional to diagnose your vitamin deficiency and for a personalized diet and recommendations, as well as information about supplements.

Despite your genetic result, it is essential to regularly check your vitamin blood level to prevent or improve your vitamin levels.

11.1 Vitamin A

Vitamin A is a nutrient that is essential for our bodies. It is an important antioxidant, preventing lipid oxidation and inflammatory processes and reducing your cardiovascular disease and cancer risk. Also, it participates in the function of the immune system and vision, in the development of the embryo during pregnancy and in the metabolism of bones and skin.

Our body is not able to produce vitamin A so we need to get it in our diets. If we do not, we may develop vitamin A deficiency. Vitamin A is present in many foods, such as spinach, green leafy vegetables, carrots, pumpkin, dairy products, liver and eggs.

Be aware if you experience any of these symptoms: dry eyes and skin, night blindness, infertility or difficulty conceiving, throat and chest infections, poor wound healing and acne and skin breakouts. All these symptoms may be due to vitamin A deficiency. However, it is essential to check your blood levels of vitamin A to confirm this deficiency.

Some people have a genetic alteration that affects the production of a protein involved in vitamin A absorption and metabolisation and these people may have vitamin A deficiency. Therefore, this category analyzes the inherited risk of vitamin A metabolism deficiency or low plasma levels.

However, it is not a diagnosis. So, before starting any treatment, it is vital to consult a healthcare professional to diagnose your vitamin deficiency and for a personalized diet and recommendations, as well as information about supplements.

Your result

- MEDIUM-LOW RISK OF VITAMIN A DEFICIENCY -

CATEGORY	DESCRIPTION
Vitamin A	This result means you probably have a low risk of vitamin A deficiency. A balanced diet and daily vitamin A consumption may protect you from this vitamin deficiency. Ensure you eat vitamin A-rich foods every day. Food sources of vitamin A are liver, dairy products, spinach, green leafy vegetables and orange-colored vegetables, such as carrots, papaya and pumpkin. Ensure you achieve the daily recommended intake or slightly exceed it. Some vitamins may be lost during cooking. So let's take a look at some tips to reduce this vitamin loss: Keep the skin on fruit and vegetables when possible; Avoid continuous reheating of food; Use a minimal amount of cooking liquid; Choose to steam food instead of boiling it; When you do boil food, keep the cooking liquid for future use (like soups and stocks); Use your microwave.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
BCMO1-1	rs12934922	TA	Medium	Increased predisposition to reduced provitamin A conversion and increased fasting β-carotene concentrations.
BCMO1-2	rs7501331	TC	Medium	Increased predisposition to reduced provitamin A conversion.

11.2 Vitamin B6

Vitamin B6 or pyridoxine is known as “the anti-depressant vitamin” because it helps regulate our moods and brain function. It promotes a healthy appetite, balanced moods, a good metabolism and restful sleep. Also, vitamin B6 is vital to reduce homocysteine, a substance that can have harmful effects on our bodies. In high amounts, it can increase cardiovascular risk.

Our bodies are not able to produce it, so we need to get it from our diet. Some good sources of vitamin B6 include poultry, fish, potatoes, chickpeas, soya beans, wheat germ, oats, carrots, bananas and fortified cereals.

If you are experiencing depression, low mood, low energy, irritability, dermatitis, poor appetite, dizziness and hair loss, you may be suffering from vitamin B6 deficiency.

The vitamin B6 recommended dietary intake for adult men and women up to 50 is 1.3 milligrams daily. For men over 50, the recommendation is 1.7 mg, while women over 50 should get 1.5 mg. One cup of cooked kidney beans contains 0.2 mg of vitamin B6, while a medium chicken fillet contains 0.75 mg.

Therefore, achieving vitamin B6 intake is relatively easy because it is found in lots of foods. Therefore, isolated vitamin B6 deficiency is rare. So, low vitamin B6 levels are usually associated with low concentrations of other B-complex vitamins, such as vitamin B12 and B9.

Moreover, vitamin B6 deficiency may occur in people who have trouble absorbing vitamin B6. This includes diseases like kidney disease, hyperthyroidism, inflammatory bowel diseases such as coeliac disease, or people with high alcohol consumption levels, which decreases vitamin B6 absorption. Also, the deficiency may occur in people who have a genetic alteration in the proteins involved in vitamin B6 absorption or metabolisation.

This category analyzes genetic risk of having a deficiency or low level of vitamin B6 due to an alteration in its metabolisation.

However, it is not a diagnosis. So, it is recommended to consult a healthcare professional to get a diagnosis of a vitamin deficiency and for a personalized diet, recommendations and potentially supplements.

Your result

- HIGH RISK OF VITAMIN B6 DEFICIENCY -

CATEGORY	DESCRIPTION
Vitamin B6	This result means you probably have an increased risk of vitamin B6 deficiency. Therefore, you should increase your consumption of foods containing vitamin B6, such as poultry, fish, potatoes, chickpeas, soya beans, wheat germ, oats, carrots, bananas and fortified cereals. Also, it is essential to consume adequate amounts of vitamin B9, such as dark green leafy vegetables, beans, peanuts, sunflower seeds, fresh fruit, fruit juices, whole grains, liver, seafood and eggs, and B12, such as foods of animal origin, including fish, meat, poultry, eggs and dairy products. Try to reduce your alcohol consumption since this may reduce the level of vitamin B6 in your blood. Your homocysteine level should be analysed since a vitamin B6 deficiency may increase it. Vitamin B6 supplements may be needed. For vitamin B6 supplements and an assessment of your homocysteine levels, it is recommended to consult a healthcare professional for a personalized diet and nutritional recommendations. Some vitamins may be lost during cooking. So let’s take a look at some tips to reduce this vitamin loss: Folate can be found in foods such: turnip greens, spinach, romaine lettuce, asparagus, Brussels sprouts, broccoli, beans, peanuts, sunflower seeds, fresh fruit, fruit juices, whole grains, liver, seafood, eggs and fortified foods. Some vitamins may be lost during the cooking process. So, let’s take a look at some tips to reduce this vitamin loss: don't peel your food; avoid continuous reheating of food; use a minimal amount of cooking water; choose to steam food instead of boiling it; when you boil food, keep the cooking water for future use (like soups and stocks); use your microwave.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
NBPF3	rs4654748	CC	**High**	High risk of low plasma vitamin B6 concentrations.

11.3 Vitamin B9 (folate)

You've probably heard that pregnant women have to take folic acid supplements, haven't you? But why is this supplement vital? Folic acid, also known as vitamin B9 or folate, is essential to fetal development, mainly because it is involved in DNA formation. But this vitamin does more than just that.

Vitamin B9 also plays a role in breaking down homocysteine, a substance that can have harmful effects on our bodies. In high amounts, it can increase cardiovascular risk. Folate is also needed to produce red blood cells, so people with vitamin B9 deficiency may develop anaemia.

Foods that naturally contain folate are turnip greens, spinach, romaine lettuce, asparagus, Brussels sprouts, broccoli, beans, peanuts, sunflower seeds, fresh fruit, fruit juices, whole grains, liver, seafood, eggs and fortified foods.

If you don't have enough folate in your diet, you could end up with a folate deficiency in just a few weeks. You might notice some of these symptoms. If you notice any of these symptoms, you may have a vitamin B9 deficiency: tiredness, severe fatigue, palpitations, shortness of breath, pale mucous membranes, such as inside the mouth, nose and eyes, dementia, irritability, depression and anxiety. During pregnancy, a vitamin B9 deficiency can cause foetal malformations. Vitamin deficiency may also occur if you have a disease or genetic alteration that reduces absorption or conversion of folate to its usable form.

Therefore, this category analyzes inherited risk of vitamin B9 (folate) metabolism deficiency or low plasma levels.

However, it is not a diagnosis. So, before starting any treatment, it is vital to consult a healthcare professional to diagnose your vitamin deficiency and for a personalized diet and recommendations, as well as information about supplements.

Your result

- MEDIUM-LOW RISK OF VITAMIN B9 (FOLATE) DEFICIENCY -

CATEGORY	DESCRIPTION
 Vitamin B9 (folate)	This result means you probably have a low risk of folate deficiency. So, a balanced diet and daily folate intake might protect you from this vitamin deficiency. Folate can be found in foods such: turnip greens, spinach, romaine lettuce, asparagus, Brussels sprouts, broccoli, beans, peanuts, sunflower seeds, fresh fruit, fruit juices, whole grains, liver, seafood, eggs and fortified foods. Some vitamins may be lost during the cooking process. So, let's take a look at some tips to reduce this vitamin loss: don't peel your food; avoid continuous reheating of food; use a minimal amount of cooking water; choose to steam food instead of boiling it; when you boil food, keep the cooking water for future use (like soups and stocks); use your microwave.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
MTHFR	rs1801133	GA	Medium	Increased risk of lower serum levels of folate.

11.4 Vitamin B12

Vitamin B12, also called cobalamin, is essential for forming red blood cells and preventing anaemia. It also plays a role in breaking down homocysteine, a substance that can have harmful effects on our bodies. In high amounts, it can increase cardiovascular risk. Our bodies are not able to produce it, so we need to get it from our diet. Vitamin B12 can be found in foods such as beef, pork, ham, poultry, lamb, fish, especially haddock and tuna, dairy products, such as milk, cheese and yogurt, and eggs.

Vitamin B12 is absorbed in our intestines. However, to be absorbed, vitamin B12 needs to bind to a protein called intrinsic factor. Imagine that vitamin B12 is a person who wants to get into a house. The intrinsic factor would be the key that allows you to get in. Therefore, a low intrinsic factor level may lead to vitamin B12 deficiency.

Certain congenital conditions, such as hereditary intrinsic factor defects and congenital vitamin B12 malabsorption, can also cause severe vitamin B12 deficiency. Also, if you do not get enough vitamin B12 from your food, you may develop a deficiency. Since B12 is found in animal products but not plant-based foods, vegans who do not eat dairy products, meat, fish, eggs, foods fortified with vitamin B12 or do not take vitamin B12 supplements may develop a deficiency. In this case, it is recommended to take this vitamin supplement to prevent a deficiency from developing since these people do not consume any food of animal origin.

People with vitamin B12 deficiency may experience fatigue, low energy, dizziness when lifting or straining, lack of concentration, memory failure and tongue inflammation. As vitamin B12 also protects red blood cells, having a vitamin B12 deficiency causes anaemia, a low number of red blood cells.

This category analyzes the inherited risk of vitamin B12 metabolism deficiency or low plasma levels. However, it is not a diagnosis. So, before starting any treatment, it is vital to consult a healthcare professional to diagnose your vitamin deficiency and for a personalized diet and recommendations, as well as information about supplements.

Your result

- MEDIUM-LOW RISK OF VITAMIN B12 DEFICIENCY -

CATEGORY	DESCRIPTION
Vitamin B12	This result means you probably have a low risk of vitamin B12 deficiency. So, a balanced diet and daily vitamin B12 intake might protect you from this vitamin deficiency. Vitamin B12 can be found in foods of animal origin such as beef, pork, ham, poultry, lamb and fish, especially haddock and tuna, dairy products, such as milk, cheese and yogurt, and eggs. However, if you are vegan, you may need a vitamin B12 supplement (cyanocobalamin). For that, you should consult a healthcare professional for a personalized diet and recommendations. Some vitamins may be lost during cooking. So, let's take a look at some tips to reduce this vitamin loss: don't peel your food; avoid continuous reheating of food; use a minimal amount of cooking water; choose to steam food instead of boiling it; when you boil food, keep the cooking water for future use (like soups and stocks); use your microwave.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
FUT2	rs602662	GA	Medium	Increased risk of vitamin B12 deficiency.

11.5 Vitamin C

Have you ever taken a vitamin C pill because you have flu or another infectious disease? Do you know why? The answer is simple. This nutrient is essential for our immune system, so it may improve your immune response to an infection and improve your symptoms when you take some vitamin C.

Vitamin C is also known as ascorbic acid and it is a powerful antioxidant. Also, it participates in collagen formation in our body and facilitates the absorption of iron, the fundamental mineral for preventing anaemia, a low number of red blood cells. Our body cannot produce vitamin C, so we need to get it from our diet. Good sources of vitamin C include citrus fruit, such as oranges and orange juice, peppers, strawberries, blackcurrants, broccoli, Brussels sprouts and potatoes.

Vitamin C deficiency is rare but may occur in people who are genetically predisposed to it. These people have a genetic alteration that impairs the functioning of a protein that transports vitamin C, hence reducing its transportation in the blood.

People who suffer from vitamin C deficiency may experience a weakened immune system, which facilitates the appearance of opportunistic diseases, such as some types of pneumonia, candidiasis or toxoplasmosis, weakness, joint pain, gingivitis, bleeding gums, poor wound healing, tooth loss and inflammation of hair follicles.

Some conditions may increase your vitamin requirements, such as smoking. In this case, you should increase your vitamin C intake. Therefore, if you smoke, your need for vitamin C is more significant (35 mg/day or more). An extra orange in your daily diet can meet this demand.

This category analyzes inherited risk of vitamin C metabolism deficiency or low plasma levels. However, it is not a diagnosis. So, before starting any treatment, it is vital to consult a healthcare professional to diagnose your vitamin deficiency and for a personalized diet and recommendations, as well as information about supplements.

Your result

- MEDIUM-HIGH RISK OF VITAMIN C DEFICIENCY -

CATEGORY	DESCRIPTION
Vitamin C	This result means you probably have a medium-high risk of vitamin C deficiency. In this case, you should increase your vitamin C intake. Vitamin C can be found in foods like citrus fruit, such as oranges and orange juice, peppers, strawberries, blackcurrants, broccoli, Brussels sprouts and potatoes. Supplements may be needed, especially if you smoke. For supplements, it is recommended to consult a healthcare professional for a personalized diet and nutritional recommendations. Some vitamins may be lost during cooking. So, let's take a look at some tips to reduce this vitamin loss: don't peel your food; avoid continuous reheating of food; use a minimal amount of cooking water; choose to steam food instead of boiling it; when you boil food, keep the cooking water for future use (like soups and stocks); use your microwave.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
SLC23A2	rs1279683	GG	**High**	High risk of reduced circulating concentrations of vitamin C.
SLC23A1	rs33972313	CC	Low	Normal risk of vitamin C deficiency.

11.6 Vitamin D

Vitamin D, also known as calciferol, is naturally found in a few foods and added to others. It is also produced endogenously when the skin is exposed to sunlight, which promotes vitamin D production.

People view their vitamin D supplement as hormone replacement therapy but is that really what it is? By definition, vitamin D is a hormone. Our body synthesises it after sun exposure and our liver and kidneys activate it.

That activated form acts as a hormone to regulate calcium metabolism because vitamin D increases calcium absorption and controls the calcium and phosphorus levels in the blood. These all affect bone health.

Therefore, vitamin D is one of the essential hormones in our body since it is necessary for protecting bones, regulating the immune system, the cardiovascular system and the metabolism of carbohydrates.

Food sources of vitamin D include dairy products, fatty fish, such as salmon, tuna and mackerel, and egg yolks. Vitamin D deficiency is prevalent, but symptoms are not evident at first. They are usually only seen when the deficiency has already become severe. The first symptoms may appear in childhood, such as slow growth, the late emergence of teeth or cavities in milk teeth.

In adults, it causes osteoporosis, weak bones, pain and muscle spasms. Fatigue and migraines are also common, as is an increase in diseases such as the flu and colds or even autoimmune diseases, such as multiple sclerosis and type 1 diabetes.

To maintain adequate vitamin D levels, you should eat foods rich in it and try to expose your skin to the sun for a short period (about 15 or 20 minutes) every day.

Vitamin D deficiency may happen when your intake of this vitamin is lower than recommended levels, exposure to sunlight is limited, the kidneys cannot convert vitamin D to its active form and absorption from the digestive tract is inadequate.

Also, some people may have a genetic alteration that alters the production of a protein that transports vitamin D in the blood, hence reducing the levels of vitamin D in the blood.

This category analyzes inherited risk of vitamin D metabolism deficiency or low plasma levels. However, it is not a diagnosis. Therefore, before starting any treatment, it is essential to consult a healthcare professional to get a diagnosis of vitamin deficiency and for a personalized diet, recommendations and potentially supplements.

Your result

- MEDIUM-HIGH RISK OF VITAMIN D DEFICIENCY -

CATEGORY	DESCRIPTION
 Vitamin D	This result means you probably have a risk of vitamin D deficiency. You should increase your daily consumption of vitamin D-rich foods, such as dairy products, fatty fish, like salmon, tuna and mackerel, and egg yolks. Also, you should expose your skin to the sun for 15-20 minutes on your face, arms, hands and legs without sunscreen. Since vitamin D is vital for calcium absorption, you may also need to increase your consumption of calcium-rich foods, like dairy products, such as milk, yogurt and cheese, dark green vegetables and soya milk. You may need vitamin D supplements and calcium supplements. For that, consult a healthcare professional for a personalized diet and supplement recommendations.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
GC	rs2282679	GT	Medium	Increased risk of lower serum levels of vitamin D.
CYP2R1-2	rs10741657	GA	**High**	High risk of low serum levels of vitamin D.
NADSYN1, DHCR7-1	rs12785878	TT	**High**	High risk of low serum levels of vitamin D.
CYP2R1-3	rs2060793	GA	Medium	Increased risk of lower serum levels of vitamin D.
NADSYN1, DHCR7-2	rs3829251	GG	Low	Normal risk of vitamin D deficiency.

11.7 Vitamin E

Vitamin E is also essential for metabolism and for the function of the immune system. It is a fat-soluble vitamin and an important antioxidant, protecting us from the damaging effects of free radicals and stopping their harmful effects. The oxidation caused by free radicals affects cells, with long-term health effects, such as increasing the risk of cardiovascular disease, cancer and inflammation.

Our body cannot produce vitamin E, so we need to get it from our diet. Good sources of vitamin E are nuts, almonds, chestnuts, sunflower seeds and vegetable oils, like soybean, canola, corn and olive oil.

Vitamin E deficiency is rare, but it can occur predominantly due to poor absorption in the intestines. This deficiency can lead to muscle weakness and consequently to difficulties with coordination. In women, it can cause infertility and difficulty getting pregnant. As one of the main antioxidants in our body, being deficient in vitamin E makes you more vulnerable to free radicals, which damage DNA and cause cellular aging, and certain diseases such as cardiovascular diseases, diabetes or cancer.

Low levels of vitamin E in the blood may be due to a genetic condition related to the levels of ApoA5, a protein responsible for the formation of HDL, the good cholesterol. Vitamin E is not soluble in water, so it does not dissolve in the blood. Therefore, to transport it in the blood, it must bind to a lipoprotein such as HDL. This means that the lower the amount of HDL in the blood, the lower the vitamin E levels. This category analyzes inherited risk of vitamin E metabolism deficiency or low plasma levels.

Your result

- HIGH RISK OF VITAMIN E DEFICIENCY -

CATEGORY	DESCRIPTION
Vitamin E	This result means you have an increased risk of vitamin E deficiency. In this case, you should raise your vitamin E intake. Vitamin E can be found in foods such as nuts, like almonds and chestnuts, sunflower seeds and vegetable oils, such as soybean, canola, corn and olive oil. An excellent strategy to increase your consumption of this vitamin is to use a shallow tablespoon of olive oil in your main meals, like lunch and dinner. Also, you should try to increase your HDL level since it transports vitamin E in the blood. In order to do so, you should increase your consumption of foods containing monounsaturated fats, such as avocado, olive oil and nuts, and incorporate foods rich in omega-3 fatty acids, such as salmon, tuna, sardines and flaxseed oil. Finally, as recommended by the guidelines for training, physical exercise may also help since this can increase your HDL level. A vitamin E supplement (alpha-tocopherol) may also be needed. For supplements, it is recommended to consult a healthcare professional for a personalized diet and nutritional recommendations, as well as a physical exercise prescription.

MARKER	LOCUS	VARIANT	RISK	DESCRIPTION
INTERGENIC	rs12272004	CC	**High**	High risk of low plasma levels of alpha-tocoferol (Vitamin E).
ZNF259, LOC100128347, APOA5, SIK3, BUD13	rs964184	CC	**High**	High risk of low plasma levels of alpha-tocoferol (Vitamin E).

III.
personalized diet plan

personalized diet plan

After analyzing your clinical questionnaire and the genetic outcomes, we have prepared you a personalized diet plan based on your genetic results, health conditions and lifestyle.

A personalized diet is developed considering the unique characteristics contained in your DNA. You are helping to increase compliance and achieve your dietary goals in a way which works for your body.

However, you should bear in mind that the genetic results are just the basis of this and how your body will change or respond to food also depends on your lifestyle. For instance, you may have a genetic predisposition to have high LDL cholesterol. Still, if you maintain a physical exercise routine and healthy eating, you may never develop an increased LDL level.

A genetic test is a tool that helps you gain a better understanding of how your body works and which diet is best for you, as well as telling you which foods should be part of your diet plan, avoided entirely or reduced on a daily basis. Also, it may be used by a healthcare professional to develop individualised diet plans that will best suit your needs.

In addition to a personalized diet, it is crucial to have a physical activity routine to maintain a healthy weight. A healthy weight is related to weight loss and muscle mass gain, physical conditioning and well-being.

We are now going to give you a personalized diet plan with foods that you should avoid or consume only in small quantities, as well as foods that we recommend you eat. However, it is essential to highlight that this food list is not a diet plan or daily menu. It's a guide.

- INTEGRATED NUTRITIONAL PLAN (LOW IN CARBOHYDRATES) -

From the combination of your genetic results, your health information and your current habits, our nutrition experts have determined that your body will respond more effectively and you will achieve better results with a **INTEGRATED NUTRITIONAL PLAN (LOW IN CARBOHYDRATES)**

A low-carbohydrate diet restricts carbohydrate consumption. Carbohydrates are mainly found in sugary foods, pasta, bread, potatoes, cakes, cookies, corn and rice. Instead of carbohydrates, you can eat whole foods that include natural proteins, such as meat, milk, cheese, beans, soya and healthy fats, like olive oil and nuts.

To achieve your goals by following this diet plan, your macronutrient intake should be 40% lipids, 25% protein and 35% carbohydrates. These percentages represent the amount of each macronutrient that should be consumed in a day, taking into account your total calorie intake.

For instance, when we say 35% carbohydrates, this means that 35% of your total calorie intake must come from carbohydrates.

Following these macronutrients is essential to achieve your weight goals, whether your goals relate to weight loss, muscle mass gain, physical conditioning or even physical well-being. For this purpose, it is crucial to consult a healthcare professional who will calculate and prescribe your dietary plan based on these proportions.

Summary of your genetic results

CATEGORY	RESULT
Morphological genetics in overweight predisposition	
Behavioural genetics in food intake	
Efficacy of exercise	
Fat metabolism	
Carbohydrate metabolism	
Lipid metabolism	
Flavour sensitivities	
Detoxification imbalances	
Supplementation	
Intolerance	
Vitamin deficiency risk	

INDICATIONS

LOW RISK | MEDIUM-LOW RISK | MEDIUM-HIGH RISK | HIGH RISK

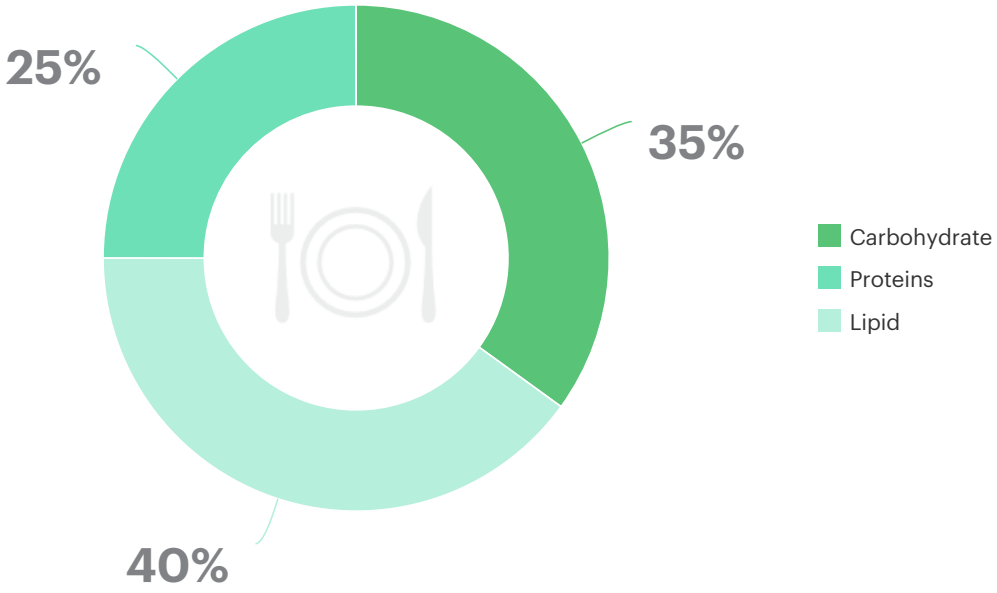
Daily food intake

You can find our recommendations for your nutritional plan here based on your genetic test and your health condition. The recommended nutritional graph shows the proportions of each macronutrient (carbohydrate, protein and lipid) that your diet should contain. If you want to know more about each of these macronutrients, you can read part 1 of this report.

Serving size is based on 100 grams

Your nutritional plan includes the following types of food

1. Vegetables
2. Legumes and derivatives
3. Fruits and derivatives
4. Cereals and derivates
5. Fish and derivatives
6. Meats and derivatives
7. Nuts and seeds
8. Shellfish and derivatives
9. Eggs and derivatives
10. Milk and derivatives
11. Oils and fats
12. Tubers and derivatives
13. Sauces and condiments
14. Sugars and derivatives
15. Snacks
16. Non-alcoholic beverages
17. Alcoholic beverages



ABOUT

From the results obtained in the analysis, **your dietary habits** and your general information, our team of advisers made up of genetic experts and nutritionists have created a **personalized plan** with **nutritional** and **dietary** recommendations.

1. Always eat 3 main meals at the same times.
2. Eat 2 scheduled small snacks of fruit and nuts in accordance with the recommendations in the report.
3. Drink 1.5 to 2 litres of plain water a day before and between your main meals.
4. Eat a dairy-based snack before bedtime.

Recommendations

- Allowed with an adjustment of the amounts and/or frequency*
- Allowed without raising the recommended quantities and/or frequency*
- Reduce the amount and/or frequency*
- Restrict, occasionally/in small quantities*

***The recommendations above are suggestions for food consumption based on your genetic results. However, it is recommended that you consult a healthcare professional to adapt your nutritional plan to your clinical history, current and previous diseases, blood tests, lifestyle and physical exercise.**

Indications

You will find a list of foods developed by our experts here. You will notice that there are one or more symbols in front of each food. These symbols were included on the food list according to your genetic predispositions and your answers to the clinical questionnaire. Please find a list of the symbols below.

	Recommended	Avoid consumption	
Caffeine intolerance	Fig intolerance	Nut intolerance	C Vitamin C
Fructose intolerance	Galactose intolerance	Papaya intolerance	D Vitamin D
Gluten intolerance	Ginger intolerance	Pineapple intolerance	E Vitamin E
Lactose intolerance	Tomato intolerance	Cow milk protein intolerance	Antioxidant
Alcohol	MUFAs	Seafood intolerance	Satiety
Carbohydrate	PUFAs	Soya intolerance	Iron
Lipid	Starch	A Vitamin A	Magnesium
Fat	Glucose	B6 Vitamin B6	Calcium
Astaxanthin intolerance	Salt	B9 Vitamin B9	Selenium
Carrot intolerance	Kiwi intolerance	B12 Vitamin B12	
Egg intolerance			

How should I read the food list and symbols?

The first column shows you the foods on the list, which are shown in green, yellow, orange and red according to the consumption recommendations provided above. The second column shows you the food intolerance symbols and symbols for nutrients and compounds which are the most important nutritional components of these foods based on your results. These symbols may be in green, meaning recommended, or red, meaning they should be avoided.

Firstly, you should read the first column to see you are allowed to eat a particular food or if you should reduce your consumption according to the recommendations above. After that, you should read the second column to view the symbols that are assigned to the food. For example, if you are looking for bananas on the food list and you see they are green, then this is a food you can eat.

If you keep reading the list, you will find the symbols for vitamins B9, B6 and C in front of the word “banana” and “calcium” in green in front of the word “banana”. This means that bananas are an excellent source of these nutrients and they are highlighted for you because you were predisposed to having low levels of these nutrients. At the same time, banana also features a red carbohydrate symbol, meaning that this food has a higher concentration of carbohydrates. Therefore, although you are allowed to eat this food, you should control the amount you eat.

A food list is a handy tool that can help you to improve your diet and health based on your DNA. However, it is suggested that you consult a healthcare professional to analyse these recommendations and indications to create a suitable diet plan and monitor your health status.

Vegetables

FOOD	INDICATIONS
Turnip greens	A B6 B9 C E Ca
Chicory	A B9 C E Ca
Red pepper	A B6 B9 C Ca
Mustard greens , raw	A B9 C E Ca
Cilantro, raw	A B9 C E Ca
Spinach, boiled	A B6 B9 E Fe Ca Mg
Red cabbage, boiled	B6 B9 C Ca
Bamboo shoots	B6 B9 Ca
Kohlrabi, raw	B9 C Ca
Chard, boiled	A B9 C E Fe Ca Mg
Spinach, canned	A B9 C E Fe Ca Mg

FOOD	INDICATIONS
Courgette	B9 C Ca
Cauliflower, boiled	B9 C Ca
Bean Sprouts	B9 C Ca
Radish	B9 C Ca
Chard	A B9 C E Ca Mg
Brussels sprout, frozen	B9 C Ca
Savoy cabbage	B9 C Ca
Swiss Chard, raw	A B9 C E Ca Mg
radicchio, raw	B9 E Ca
Chive	A B9 C Ca
Asparagus, green	B9 Fe Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Vegetables

FOOD	INDICATIONS
Leek, frozen	B6 B9 Ca
Mushroom, griddle	B9 Ca Se
Endive, raw	B9 Ca
Jicama, raw	B9 C Ca
Leek, raw	B6 B9 Ca
Garlic	B6 B9 C Ca Se
Watercress	A B9 C Ca
Broccoli, boiled	B9 C Ca
Cabbage, white	B9 C Ca
Cabbage	B9 C Ca
Scallions/Green onion	B9 C Ca

FOOD	INDICATIONS
Tomato	B9 C Ca
Arugula	B9 C Ca
Tomato, ripe, peeled and ground, canned	B9 C Ca
Calabash	B9 Ca
Mushroom	B9 Ca Se
Green bean, boiled	B9 Ca
Lettuce	A B9 Ca
Romaine lettuce	A B9 Ca
Pumpkin, boiled	A B9 Ca
Sauerkraut	C B9 Ca
Squash, acorn, baked	B9 Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Vegetables

FOOD	INDICATIONS
Sweet pepper, canned	C B9 Ca
Corn, on the cob	B9 Ca
Turnip, peeled	B9 Ca
Cucumber	B9 Ca
Onion	B9 Ca
Palm heart, canned	Fe B9 Ca
Celery, raw	B9 Ca
Ginger root, raw	B9 Ca
Hearts of Palm, canned	Fe B9 Ca
water chestnut	
Celery root	B9 Ca

FOOD	INDICATIONS
Carrot	A B9 Ca
Grape leaves, Sera	Fe C Ca
Cardoon	Ca B9
Artichoke, frozen	Ca B9
Celery	B9 Ca
Okra, cooked	B6 B9 C Ca Mg
Soybean, sprouts, canned	B9 Ca Mg
Broccoflower, cooked	B9 B6 C Ca
Avocado, raw	B6 B9 E Ca FAT
Baby bok choy	Ca C
Squash, all varieties, baked, winter	B9 A Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Vegetables

FOOD	INDICATIONS
Green bean, canned	Ca B9
Pico de Gallo	Ca B9
Onion, roasted	Ca B9
Asparagus, white, canned	C B9 Ca
Parsnips, cooked	C B9 Ca
Kale, raw	A C Ca
Collard greens, fat added, cooked, fresh	A B9 C E Ca
Peas, green	C B9 Ca
Arrowroot powder	Fe
Edamame	Fe B9 Ca Mg FAT
Eggplant, cooked, no added fat	Ca B9

FOOD	INDICATIONS
Beetroot, raw	B9 Ca
Caper	Ca B9
Rutabaga, cooked	C B9 Ca
Beetroot, pickled, drained	Ca B9
Shallots, raw	B9 C Ca
Artichoke, tinned	Ca B9
Kohlrabi, cooked	C B9 Ca
Olive, green	B9 E Ca FAT
Horseradish	C B9 Ca
Horseradish, prepared	C B9 Ca
Aubergine	B9 Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Vegetables

FOOD	INDICATIONS
Bitter melon, cooked	B9 C Ca
Mushrooms, canned	Ca B9
Beets, drained, boiled, cooked	B9 Ca
Tomato, roasted	B9 C Ca
Fennel, cooked	Ca B9

FOOD	INDICATIONS
Escarole	B9 Ca
Olive, black	Fe Ca FAT
Bell pepper, raw	C
Beetroot, cooked in unsalted water	Ca B9
Pickled gherkin	B9 Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Legumes and derivatives

FOOD	INDICATIONS
Lentil, boiled	B9 Fe Ca
Pinto bean, steeped, boiled	B6 B9 Ca
Broad bean, dried, steeped, boiled	B9 Ca
Chickpea, canned	B6 B9 Ca Mg
White bean, boiled	B9 Fe Ca Mg
Pea, frozen, boiled	B9 Ca
Chickpea, boiled	B9 Fe Ca
Pea, canned	Ca B9
White bean, tinned	B9 Fe Ca Mg
Soybean, dry, soaked, boiled	B6 B9 Fe Ca Mg FAT
Chickpea flour, Bobs Red Mill Natural Foods, Inc	Fe Ca FAT

FOOD	INDICATIONS
Lentil, canned	B9 Fe Ca FAT
Tofu	B9 Fe Ca Se
Kidney Bean	B9 Fe Ca FAT
Black Bean	B9 Ca Mg FAT
Broad bean, fried	B9 Ca FAT
Tahini paste	B9 Fe Ca Mg Se FAT
Soy flour	B6 B9 E Fe Ca Mg FAT
Pea Protein	Fe
Bar, Mind chocolate chip, high protein, Luna, Inc	B6 B12 C Fe Ca FAT
Bar, high protein, chocolate coconut, Luna Inc.	B6 B12 C Fe Ca FAT
Bar, chocolate chip cookie dough protein bar	Fe Ca FAT

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Fruits and derivatives

FOOD	INDICATIONS
Raspberry	B9 C Ca
Cranberries, raw	B9 C Ca
Black currant	C Ca
Strawberry	B9 C Ca
Lime	B9 C Ca
Lemon juice, raw	B9 C Ca
Blackberries, raw	B9 E Ca
Chayote	B9 Ca
American persimmons	C Fe Ca
Melon	B9 C Ca
Avocado	B6 B9 E Ca FAT

FOOD	INDICATIONS
Custard apple	C Ca
Grapefruit	B9 C Ca
Red grape	B9 C Ca
Watermelon	B9 Ca
Orange	B9 C Ca
White grapes	B9 C Ca
Red currant	B9 C Ca
Olive	B9 E Ca FAT
Papaya, without skin	B9 C Ca
Pineapple	B9 C Ca
Apricot	B9 Ca

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- Restrict, occasionally/in small quantities

Fruits and derivatives

FOOD	INDICATIONS
Nectarine	B9
Coconut	B9 Fe Ca Se FAT
Pear	B9 Ca
Yellow plum, with skin	B9 Ca
Kiwi	B9 C Ca
Peach	B9 Ca
Coconut, dried	B6 B9 Fe Ca Mg Se FAT
Maracuja - Passion Fruit	B9 C Ca
Litchis	C B9 Ca
Mango, without skin	C B9 Ca
Banana	B9 B6 Ca

FOOD	INDICATIONS
Tangerine	C B9 Ca
Plantain, yellow, raw	B6 B9 C Ca
Olive, black, with pip	Fe Ca FAT
Persimmon	Ca B9
Pomegranate	Ca B9
Pomegranate, raw	Ca B9
Coconut flour, organic, by Hy-Vee, Inc.	Fe Ca FAT
Cherry	Ca B9
Figs	Ca B9
Fruit salad, canned in own juice	Ca B9
Apple	Ca B9

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Fruits and derivatives

FOOD	INDICATIONS
Pineapple, canned, in juice	Ca B9
Plum, canned	Ca B9
Jackfruit, raw	Ca B9
Blueberry	B9 Ca

FOOD	INDICATIONS
Date	B9
Peach, dried	Fe
Fruit paste	C B9 Ca
Raisin	Ca B9

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Cereals and derivates

FOOD	INDICATIONS
Quinoa	B6 B9 E Fe Ca Mg Se FAT
Corn starch	B6 B9 Fe Ca Mg Se
Barley	B6 B9 Fe Ca Mg Se
Rye	B6 B9 Fe Ca Mg Se
Barley flour	B6 B9 Fe Ca Mg Se
Rye flour	B6 B9 Fe Ca Mg Se
Wheat, bran	B6 B9 Fe Ca Mg Se
Corn flour	B6 B9 Fe Ca Mg Se
Brown rice	B6 B9 Ca Mg Se
Sorghum	B6 B9 Fe Ca Mg Se
Sorghum flour, whole grain	B6 B9 Fe Ca Mg Se

FOOD	INDICATIONS
Buckwheat	B6 B9 Fe Ca Mg Se
Buckwheat flour, whole groat	B6 B9 Fe Ca Mg
Millet	B6 B9 Fe Ca Mg
Wholewheat flour	B9 Fe Ca Mg Se
Tortilla-Corn	B6 B9 Ca Mg
Quinoa, cooked	B9 Ca Mg
Whole bread, toasted	B6 B9 Fe Ca Mg Se
Wheat flour	B9 Fe Ca Se
Oat	B9 Fe Ca Mg Se FAT
Wholewheat bread	B6 B9 Fe Ca Mg Se
Pasta, homemade, made with egg, cooked	B9 Ca

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Cereals and derivates

FOOD	INDICATIONS
Crackers, melba toast, wheat	B9 Fe Ca Se
Teff flour, whole grain, Bobs Red Mill Natural foods, Inc	Fe Ca
Casava Flour	Ca
Brown rice flour	Ca Mg Se
Amaranth flour, organic, Bobs Red Mill Natural foods, inc.	Fe Ca FAT
Oat flour, Bobs Red Mill Natural foods, Inc	Fe Ca FAT
Corn flour, organic, Bobs Red Mill Natural foods, Inc.	Fe FAT
Rye bread	Fe B9 Ca Se
Pasta, whole, cooked	Ca B9 Se
Egg-free pasta	B9 Ca
Tortilla- Brown rice	Ca B6

FOOD	INDICATIONS
Black rice, cooked	
Gluten-free pizza crust, Smart Flour Co	Fe Ca FAT
Flax, seeds	B6 B9 Fe Ca Mg Se FAT
Rice, boiled	Ca B9
Rice, brown, cooked, no added fat	Ca B9
Gluten-free crackers, plain	B6 B9 Fe Ca Mg Se FAT
Gluten-free crackers, multi-seeded, multigrain	B6 B9 Fe Ca Mg Se FAT
Gluten-free crackers, Multi-grain crisps, Crunchmaster	B6 B9 Fe Ca Mg Se FAT
Gluten-free lassic white bread, Schar	Fe B9 Ca
Crackers	B9 Fe Ca Se FAT
Wheat germ	B6 B9 E Fe Ca Mg Se FAT

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Cereals and derivates

FOOD	INDICATIONS
Pasta, filled with meat, boiled	B9 B12 Ca Se
Gluten free bread	B9 Fe Ca
Gluten-free lentil crackers, ancient grain, Halal Company	Fe Ca
Gluten-free Bread	B9 Fe Ca
Gluten-free Sourdough bread, Cooks	
Tortilla-Flour	B9 Fe Ca Se
Oat flour	B9 Fe Ca Mg Se
Tortilla-whole grains flours brn rice, corn, amaranth, quinoa, millet, teff	Fe Ca
Barley bread	Fe B9 Ca Se
Gluten-free crackers, organic, Marys Gone Crackers	Fe Ca Mg Se
Gluten-free rice, multi seed, thin crackers, Back To Nature	Fe Ca

FOOD	INDICATIONS
Gluten-free pretzels, deli style, everything spice, Snack Factory, Inc	
Gluten-free bread crumbs, Schar	Ca
Breadcrumbs	B9 Fe Ca Se
Gluten-free omega flax bread	Fe Ca
Gluten-free pizza crust mix, Bob's Red Mill Natural foods, Inc	
Gluten-free pizza crust, The Gluten Free Food Group, LLC	Ca
pizza crust cauliflower	C Ca
Gluten-free flat bread pita, by Production House, Inc.	
Gluten-free crackers, Back to Nature	Fe Ca
Gluten-free bread & pizza crust mix, The King Arthus Flour Co	Ca Fe
Gluten-free crackers, 6 whole grain & 4 seed, The Perfect 10, Vans	Ca Mg

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Cereals and derivates

FOOD	INDICATIONS
Gluten-free artisan baker 10 grains & seeds bread, Schar	
Gluten-free 7 grain bread, Kroger co.	Ca
Gluten-free challah bread, Gluten Free Bake Shop	Ca
Gluten-free pizza crust , Wegmans Food Markets, Inc	Ca
Oat bread	Fe B9 Ca Se
Almond flour	Fe Ca Mg
Corn bread	B9 Fe Ca Se
Gluten-free crackers, table crackers, Schar	Ca
Gluten-free Entertainment crackers, Schar	
Gluten-free baked cheddar bunny tails baked crackers	Ca
Bar, "Clif bar", Clif Inc	B6 B12 C Fe Ca
Raisin pudding	B9 D Ca Se
Cereal, GoLean Crunch, Kashi	B9 Fe Ca Mg Se
Gluten-free multigrain sandwich bread, Whole Foods Market, Inc.	
Granola	B9 Fe Ca Mg Se
Cereal, Honey Vanilla Crunch organic gluten free, Cascadian Farms	Fe Ca
gluten free multigrain bread	Ca
Gluten-free Whole grain bread soft & hearty, Udi's	Ca
Cereal, Apple Cinnamon, Kind, Inc	Ca
Gluten-free White Soft & Delicious Sandwich Bread	B9 Ca Se
Bar, Fruit & Nut, Kind, Inc.	Fe Ca Mg Se
Gluten-free Original sandwich bread, Rudi's	Ca

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Cereals and derivates

FOOD	INDICATIONS
Gluten-free animal crackers, Simple Truth by Kroger Co	Fe Ca
Cereal, Honey Almond, Kind, Inc	Fe Ca
Cereal, Dark chocolate almond, Kind, Inc	Fe Ca
Cereal, Cranberry almond, Kind, Inc	Ca
Bar, Energy Bar, Clif Inc	Ca Mg
Bar, Z bar, Clif Inc	B^9 C Fe Ca Mg Se
Bar, dark chocolate mocha almond bar, Luna Inc	B^6 B^{12} C Fe Ca Mg

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Fish and derivatives

FOOD	INDICATIONS
Tuna	B6 B9 B12 D Ca Se
Cod	B6 B9 B12 D Ca Se
Halibut	B6 B9 B12 D Ca Se
Tuna, canned in water	B6 B9 B12 D Ca Se
Monkfish, grilled	B6 B9 B12 Ca Se
Pout	B6 B9 B12 Ca Se
Tuna, baked	B6 B9 B12 D Ca Se
Seabass	B6 B9 D Ca Se
Grouper, griddle	B6 B9 Ca Se
Whiting, frozen	B9 B12 D Ca Se
Cod, smoked	B9 B12 D Ca Se

FOOD	INDICATIONS
Perch	B9 B12 D Ca Se
Swordfish	B6 B9 B12 D E Ca Se FAT
Trout, smoked	A B6 B9 B12 D E Ca Se FAT
Mullet	B6 B9 D Ca Se
Trout	B6 B9 B12 D E Ca Se FAT
Pike, baked	B9 B12 D Ca Se
Salmon	B6 B9 B12 D Ca Se
Sardine in tomatoes	B6 B9 B12 D E Fe Ca Se FAT
Sea bream	B6 B9 B12 D Ca Se
Perch, baked	B9 B12 D Ca Se
Sole, baked	B9 B12 D Ca Se

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Fish and derivatives

FOOD	INDICATIONS
Smoked salmon	B6 B9 B12 D Ca Se
Sardine, roasted	B6 B9 B12 D E Fe Ca Mg Se
Anchovy cooked	B9 B12 D E Fe Ca Mg Se
Flounder, steamed	B9 B12 D Ca Se
Tuna, griddle	B6 B9 D Ca Se
Cod, fresh, baked	B12 B9 Ca Se
Caviar	A B6 B9 B12 D E Fe Ca Mg Se
Herring, salted	B6 B9 D E Fe Ca Mg Se
Swordfish baked	B9 B12 D E Ca
Codfish, fried	B12 B9 Ca Se
Hake	B6 B9 B12 Fe Ca Mg Se

FOOD	INDICATIONS
Mackerel, baked	B6 B9 B12 D E Ca Mg Se
Carp, baked	B6 B9 B12 D Ca Se
Dogfish	B6 B9 B12 D Ca Mg Se
Swordfish, griddle	B6 B9 B12 D E Ca Se
Salmon, griddle	B6 B9 B12 D Ca Se
Anchovy	B9 B12 Fe Ca Se
Mackarel	B6 B9 B12 D Ca Mg Se
Mackerel, canned in oil, drained	A B9 B12 D Ca Se
Sardine	B9 B12 D E Fe Ca Se
Whiting	B6 B9 D Ca Se
Herring, smoked	B6 B9 B12 D Ca Se

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Fish and derivatives

FOOD	INDICATIONS
Ray	B6 B9 B12 Ca Mg Se
Iridescent shark	B9 B12 Ca Se
Sardine canned in tomato sauce	B9 B12 D Fe Ca Se

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Meats and derivatives

FOOD	INDICATIONS
Liver, pork	A B6 B9 B12 C Fe Ca Se
Turkey, breast, without skin, grilled	B6 B9 B12 Ca Se
Turkey	B6 B9 B12 Ca Se
Ostrich, sirloin	B6 B9 B12 Fe Ca Se
Liver, beef	A B6 B9 B12 D Fe Ca Se
Beef, part n/s, roasted, with separable fat	B6 B9 B12 Fe Ca Se
Beef, rump steak, barbecued, lean	B6 B9 B12 Fe Ca Se
Pork, loin	B12 B6 Ca Se
Beef, heart, cooked	B6 B9 B12 Fe Ca Se
Chicken luncheon meat	B9 B6 Ca Se
Liver, chicken	A B6 B9 B12 C Fe Ca Se

FOOD	INDICATIONS
Quorn, pieces, as purchased	B9
Beef, rump steak, barbecued, lean and fat	B6 B9 B12 Fe Ca Se
Turkey, leg, with skin	B6 B9 Fe Ca Se
Chicken, leg, with skin, roasted	B6 B9 B12 Ca Se
Chicken, breast, grilled	B6 B9 Ca Se
Veal, rib, with separable fat	B6 B9 B12 Ca Se
Heart, chicken	B6 B9 B12 Fe Ca
Pork, rib	B12 B6 Ca Se
Pork, sirloin, roasted	B12 B6 Ca Se
Ham, roasted	B12 B6 Ca Se
Turkey, breast, with skin	B9 B6 Ca Se

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Meats and derivatives

FOOD	INDICATIONS
Beef, sirloin steak, grilled rare, lean	B6 B9 B12 Ca Se FAT
Pork, loin, roasted	B6 B9 B12 D Ca Se
Cooked ham	B6 B9 B12 D Ca Se
Pork, shoulder, cooked, lean and fat eaten	B6 B9 B12 D Ca Se
Veal, sirloin, roasted, with separable fat	B6 B9 B12 Ca Se FAT
Burger, beef, 98-99% beef, grilled	B6 B12 D Fe Ca Se
Chorizo	B6 B9 B12 D Fe Ca Se
Turkey luncheon meat	B9 B6 Ca Se
Mincemeat	B6 B9 B12 Fe Ca Se
Pork, chop	B6 B12 Ca Se FAT
Cured pork, loin	B6 B9 B12 Ca Se FAT

FOOD	INDICATIONS
Quail, cooked	B6 B9 Fe Ca Se FAT
Oxtail	B6 B9 B12 Fe Ca Se
Veal, loin, with separable fat	B6 B9 B12 Ca Se FAT
Beef, part n/s, stewed, with separable fat	B6 B9 B12 Fe Ca Se
Heart, lamb	B9 B12 Fe Ca Se FAT
Chicken, breast, with skin	B6 B9 Ca Se FAT
Beef, sirloin, grilled	B6 B9 B12 Fe Ca Se
Turkey or chicken sausage, reduced sodium	B6 B9 Se FAT
Vegetarian sausage patties, Morningstar Farms	B6 B12 Fe Ca FAT
Veggie Burgers "grillers" by Morningstar Farms	B6 B12 Fe Ca FAT
Chicken, wing, with skin	B6 B9 Ca Se FAT

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Meats and derivatives

FOOD	INDICATIONS
Chicken, with skin, roasted	B6 B9 Ca Se FAT
Beef, sirloin steak, grilled rare, lean and fat	B6 B9 B12 Ca FAT
Salami	B6 B12 D Ca Se FAT
Vegetarian burger spicy black bean	Ca FAT
Bacon, smoked, grilled	B6 B12 Ca Se FAT
Pork sausage	B9 B12 D Ca Se FAT
Hen	B6 B9 Ca Se FAT
Sausage, smoked link sausage, pork	B9 B12 D Ca Se FAT
Liver sausage, liverwurst, pork	A B9 B12 Fe Ca Se FAT
Rabbit, stewed	B6 B9 B12 Ca Se FAT
Foie gras	A B9 B12 Fe Ca Se FAT

FOOD	INDICATIONS
Cooked ham, canned	B6 B9 B12 Ca Se FAT
Bacon	B6 B12 Ca Se FAT
Sausage	B9 B12 D Ca Se FAT
Sausage, fresh	B6 B9 B12 Ca FAT
Bologna	B9 B12 D Ca Se FAT
Pork and beef sausage	B9 B12 D Ca Se FAT
Lamb, rib	B9 B12 Ca Se FAT
Lamb, not specified part	B9 B12 Ca Se FAT
Duck, roasted	B9 Fe Ca Se FAT
Polish sausage, pork	B9 B12 Ca Se FAT
Vegetarian sausage patties, maple, Morningstar Farms	B6 B12 Fe Ca FAT

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Meats and derivatives

FOOD	INDICATIONS
Pork luncheon meat	B9 B12 Ca Se
Pork, not specified part	B9 Ca
Burger, beef, 62-85%, beef, grilled	B12 Fe Ca
Sausages, beef, grilled	B9 B12 Ca
Sausages, vegetarian, baked/grilled	B9 Fe Ca
Chicken croquettes	B9 Ca Se
Vegetarian burger "meat lovers" by Morningstar farms foods Inc.	Ca
Sausage, smoked, Chicken and bread	B9 B12 Ca

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Nuts and seeds

FOOD	INDICATIONS
Sweetened almond milk	B9 D E Ca
Lupin	B6 B9 Fe Ca Mg Se FAT
Brazil nuts, kernel only	B6 B9 E Fe Ca Mg Se FAT
Brazil nut	B6 B9 E Fe Ca Mg Se FAT
Hazelnut	B6 B9 E Fe Ca Mg FAT
Peanut, unsalted	B6 B9 E Ca Mg FAT
Sesame, seed	B6 B9 Fe Ca Mg Se FAT
Almond	B9 E Fe Ca Mg FAT
Almond, toast	B9 E Fe Ca Mg FAT
Peanut, toasted, salted	B6 B9 E Ca Mg Se FAT
Walnut	B6 B9 Fe Ca Mg FAT

FOOD	INDICATIONS
Macadamia Nut	B6 B9 Fe Ca FAT
Unsweetened almond milk	D B9 E Ca
Pine nut	B9 E Fe Ca Mg FAT
Pecan nuts, kernel only	B9 E Fe Ca Mg Se FAT
Pumpkin seeds	B9 Fe Ca Mg Se FAT
Peanut butter, smooth	B6 B9 E Ca Mg FAT
Cashew nut	B6 B9 Fe Ca Mg Se FAT
Chestnut	B6 B9 C Ca
Chestnut, roasted	B6 B9 C Ca
Pistachio nut	B6 B9 E Fe Ca Mg Se FAT
Bar, Fruit, Nut & Veggie bar, Naked	C Fe Ca Mg FAT

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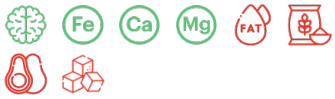
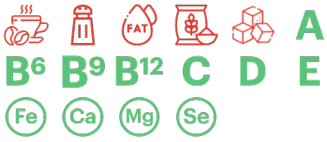
Nuts and seeds

FOOD	INDICATIONS
Bar, Almond, Kind Inc.	
Cashew Milk	
almond creamer, by Danone Us, LLC	

FOOD	INDICATIONS
Bar, Peanut Butter Dark Chocolate, Kind Inc	
Bar, Protein, Kind, Inc.	
Bar, Nuts over Chocolate, Luna, Inc.	

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Shellfish and derivatives

FOOD	INDICATIONS
Cuttlefish	A B6 B9 Fe Ca Mg Se
Crab	B9 B12 E Ca Se
Octopus, boiled	B6 B9 B12 Fe Ca Se
Cockles	Fe Ca
Lobster, boiled	B12 B9 Ca Se
Crayfish	B12 B9 Ca Se
Clams	B9 B12 Ca Se
Squid, roasted	B12 B9 Ca Se
Mollusks, blue mussel, cooked, moist heat	B9 B12 C Fe Ca Se

FOOD	INDICATIONS
Shrimp, boiled	B12 B9 Ca Se
Scallop	B12 B9 Ca Se
Mussel, canned in brine	B9 B12 C Fe Ca Mg Se
Mussel, boiled	B9 B12 C Fe Ca Mg Se
Snail	B9 B12 E Fe Ca Mg Se FAT
Scampi or langoustine	Ca
Oyster	B9 B12 Fe Ca Mg Se
Variegated scallop	B9 B12 Ca Mg Se FAT

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Eggs and derivatives

FOOD	INDICATIONS
Egg, duck	A B6 B9 B12 D Fe Ca Se
Egg, chicken, boiled	A B9 B12 D Ca Se
Egg, quail	A B9 B12 D Fe Ca Se
Egg, turkey	A B9 B12 Fe Ca Se
Egg, chicken, white	A B9 B12 D Ca Se
Egg, chicken, poached	A B9 D Ca Se
Egg, chicken, fried	A B9 B12 D Ca Se
Omelette	A B9 Ca

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Milk and derivatives

FOOD	INDICATIONS
Almond milk	B9 D E Ca
Soy Yoghurt	Ca B9 Se FAT
Milk, skimmed, pasteurized	B9 B12 D Ca
Kefir	A B9 D Ca
Clarified butter	B6 D E Ca FAT
Milk, semi-skimmed, pasteurized	B12 B9 D Ca FAT
Yoghurt, skimmed, vanilla flavour	B9 B12 D Ca
Cottage cheese	B12 B9 Ca Se
Milk	D B12 Ca FAT
Egg custard	B6 B9 B12 Ca Se FAT
Brie cheese	A B6 B9 B12 Ca Se FAT

FOOD	INDICATIONS
Camembert cheese, 20-30% fidm	A B6 B9 B12 Ca Se FAT
Greek yoghurt, plain	B12 B9 Ca Se FAT
Cheese Feta	A B6 B9 B12 Ca Se FAT
Goat's milk	D B9 Ca FAT
Coconut milk	D B12 Ca FAT
Nutritional drink or shake, liquid, soy-based	B6 B9 B12 C D E Ca FAT
Cream cheese spread, fat free	B12 B9 Ca
Fresh cheese	A B9 B12 D Ca Se FAT
Yoghurt, skimmed, plain flavour	B9 B12 D Ca
Cheese, fresh, queso fresco	A B9 B12 D Ca Se FAT
Sheep's milk	Ca B9 FAT

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Milk and derivatives

FOOD	INDICATIONS
Yoghurt mousse, plain	B9 Ca
Gouda cheese	A B9 B12 Ca Se Salt Fat
Milk, goats, pasteurised	Ca B9 Fat
Cream 18% fat	A B9 Ca Fat Gluten
Cream 30% fat	A B9 Ca Fat Gluten
Gruyere cheese	A B9 B12 Ca Se Salt Fat Gluten
Liquid yoghurt	B9 B12 D Ca
Blue cheese	A B9 B12 Ca Se Salt Fat
Cheddar cheese	A B9 B12 Ca Se Salt Fat
Mozzarella cheese	A B9 B12 Ca Se Salt Fat
Parmesan cheese	A B9 B12 Ca Se Salt Fat

FOOD	INDICATIONS
Grated cheese, parmesan	A B9 B12 Ca Se Salt Fat
Cheese fondue	A B9 B12 Ca Se Salt Fat
Provolone Cheese	A B9 B12 Ca Se Salt Fat
Almond milk yogurt, vanilla, by Dahilicous	Ca Fat
Goat cheese, cured	A B9 Ca Salt Fat
Goat cheese, uncured	A B9 Ca Salt Fat
Roquefort cheese	A B9 Ca Se Salt Fat Gluten
Yogurt parfait, low fat, with fruit and granola	B6 B9 B12 C Ca Grain
Sour cream	A B9 Ca Fat Gluten
Cheese, edam type	A B9 B12 Ca Se Salt Fat Gluten
Cheese spread	A B9 B12 Ca Salt Fat Gluten

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Milk and derivatives

FOOD	INDICATIONS
Monterey Jack- Cheese	A B9 B12 Ca Se
Pepper Jack - Cheese	A B9 B12 Ca Se
Coconut milk creamer, organic	
Emmental cheese	A Ca
Asedero Cheese	B9 Ca Se
Cheese, hard cheese, pecorino, sheep milk	A Ca
Coconut milk yogurt, WWf Operating Company	Ca B12
Yoghurt mousse, with fruits	B9 D Ca
Yoghurt , skimmed, flavoured n/e	B12 B9 D Ca
Cream, half and half	B9 Ca

FOOD	INDICATIONS
Milk, semi-skimmed, dried	A B6 B9 B12 D Ca Mg Se
Yoghurt, skimmed, with fruits	B12 B9 D Ca
Yogurt, NS as to type of milk, fruit (contain jams)	B12 B9 D Ca
Almond milk yogurt, organic, by Dahlicious	Ca
Almond milk yogurt, organic, blueberry, by Dahlicious	Ca
Cream cheese spread, light	A B9 B12 Ca
Yogurt, greek, strawberry, low fat	B12 B9 Ca Se
Swiss spread cheese	A B9 B12 Ca Se
Almond milk yogurt, strawberry, Lyrical foods, Inc.	Ca

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Oils and fats

FOOD	INDICATIONS
Wheat germ oil	E
Olive oil	E
Extra virgin olive oil	E
Extra virgin olive oil, organic	E
Palm oil	E
Cod liver oil	A D
Soya, oil	E

FOOD	INDICATIONS
Coconut oil	
Pork lard	D
Flaxseed oil	
Mayonnaise light	B^9 E Ca
Walnut oil	
Butter with salt	A B^9 Ca

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Tubers and derivatives

FOOD	INDICATIONS
Red potatos, baked	B6 B9 C Ca
Potato, red, flesh & skin, baked	B6 B9 C Ca
Potato, russet, cooked in skin, microwaved	B9 B6 C Ca
Parsnip	B9 C Ca
Sweet potato, baked, flesh, cooked	B9 B6 C Ca
Arrowroot flour	B9 Ca
Sweet potato	A B9 Ca

FOOD	INDICATIONS
Potato, cooked, fat added	B6 B9 C Ca Se
Potato, roast	B9 B6 C Ca
Potato, boiled	B9 B6 C Ca
Tapioca flour, organic, by The Hain Celestial group, Inc	
Beetroot, canned	Ca B9
Sweet potato, flesh only, boiled in unsalted water	A B9 Ca
Sweet potato, baked	A B9 C Ca

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Sauces and condiments

FOOD	INDICATIONS
Jalapeno Peppers	B6 B9 C E Ca
Chili or hot pepper	B6 B9 C E Ca
Mint, fresh	A B9 C Fe Ca Mg
Oregano, dried	B6 B9 E Fe Ca Mg
Parsley, fresh	A B9 C Fe Ca
Rosemary	A B6 B9 C Fe Ca Mg FAT
Basil	A B9 C Fe Ca Mg
Cinnamon, powder	B9 E Fe Ca Mg
White pepper	B9 C Fe Ca Mg
Bay, leaf	A B6 B9 C Fe Ca Mg FAT
Garlic, powder	B6 B9 Fe Ca Mg Se

FOOD	INDICATIONS
Thyme, dried	A B6 B9 C E Fe Ca Mg FAT
Dill, dried	A B6 C Fe Ca Mg
Black pepper	B6 B9 Fe Ca Mg
Chili pepper, red	B6 B9 C Ca
Chili pepper, green	B6 B9 C Ca
Apple vinegar	Ca
Wine vinegar	Ca
Sauce, peppers, hot, chili, mature red, canned	B9 C Ca
Ginger	B9 Ca
Saffron	B6 B9 C Fe Ca Mg FAT
Fennel	B9 Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Sauces and condiments

FOOD	INDICATIONS
Sea salt	Ca
Iodized salt	Ca
Soya, sauce	Ca B9 Mg
Curry	B9 E Fe Ca Mg Se FAT
Bechamel sauce	A B9 B12 D Ca FAT
Cumin	B6 B9 E Fe Ca Mg FAT
Mustard	B9 Ca Se FAT
Tahini	B9 Fe Ca Mg Se FAT
Bolognese sauce	A C FAT
Pesto sauce	B9 E Ca Mg FAT
Nutmeg	B9 Fe Ca Mg FAT

FOOD	INDICATIONS
Tabasco, sauce	B9 Ca
Curry sauce	B9 E Ca FAT
Peppers, hot chile, sun-dried	A B6 B9 C E Fe Ca Mg FAT
Tomato chili sauce	B9 C E Ca FAT
Cheese sauce	B9 Ca FAT
Fried green tomatoes	B9 Ca Se FAT
Gomasio	B9 Fe Ca Mg Se FAT
Vanilla	Ca
Balsamic vinegar	Ca
Paprika, powder	A B6 B9 E Fe Ca Mg FAT
Sweet and sour sauce	Ca B9

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Sauces and condiments

FOOD	INDICATIONS
Ketchup	B9 Ca
Barbecue sauce	B9 Ca

FOOD	INDICATIONS
Vinaigrette sauce, with olive oil	E Ca FAT
Cheese sauce mix, dry	B9 B12 Ca FAT

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Sugars and derivatives

FOOD	INDICATIONS	FOOD	INDICATIONS
Honey	Ca B9	Gelatin Desserts Dry Mix Prepared With Water	Ca B9

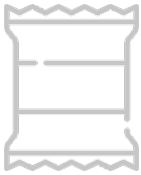
Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Snacks



FOOD	INDICATIONS
Pop corn	B6 B9 E Ca Mg FAT
Corn chips	B9 E Ca Mg FAT

- Allowed with an adjustment of the amounts and/or frequency
- Allowed without raising the recommended quantities and/or frequency.
- Reduce the amount and/or frequency.
- Restrict, occasionally/in small quantities

Non-alcoholic beverages

FOOD	INDICATIONS
Lemon juice, fresh	B9 C Ca
Carrot, fresh juice	A B6 B9 Ca
Tea - without sugar	B9 Ca
Tomato, fresh juice	C B9 Ca
Tap water	Ca
Mineral water	Ca
Sparkling water, bottled	Ca
Coffee, substitute, instant	B6 B9 Fe Ca Mg Se
Coconut Water	Ca
Orange juice	B6 B9 C
Sport drink	

FOOD	INDICATIONS
Soy milk	B12 B9 D Ca FAT
Pineapple juice	B9 C Ca
Blackcurrant juice	C Ca
Non-alcoholic beer	B9 Ca
Grapefruit juice	B9 C Ca
Carbonated drink, lemon	
Apple juice	Ca
Cranberry juice	Ca C
Fruit juice	Ca C
Lemonade	B9
Infusion, tea, herbal	B9

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Non-alcoholic beverages

FOOD	INDICATIONS
Coffee, seed or powder, decaffeinated	
Coffee, brewed, decaffeinated	
Tea, without sugar	
Coffee infusion, with milk	B9 Ca
Coffee, powder	Fe Ca Mg Se
Soluble coffee, powder	B9
Coffee, brewed	B9
Tea infusion, with milk	B9 Ca

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Alcoholic beverages

FOOD	INDICATIONS
White wine	B9 Ca
Wine, rose	B9 Ca
Red wine	B9 Ca
Stout, Guinness	B9 Ca
Cognac	
Gin	
Rum	
Tequila	

FOOD	INDICATIONS
Vodka	
Whisky	
Sparkling wine, cava type	B9 Ca
Beer	B9 Ca
Beer, low alcohol	B9 Ca
Sidra	B9 Ca
Sangria	B9 Ca
Fruit liqueur	

Allowed with an adjustment of the amounts and/or frequency

Allowed without raising the recommended quantities and/or frequency.

Reduce the amount and/or frequency.

Restrict, occasionally/in small quantities

Supplements

In this section, you will find some nutraceuticals that we recommend to you based on your DNA and clinical questionnaire data. This food supplement aims to help you to improve your health through the personalized recommendation. Nutraceuticals concentrate on nutrients or other substances with a nutritional or physiological effect that are marketed in "dosage" form, for example, pills, tablets, capsules or liquid. Many nutrients and other ingredients may be included, such as vitamins, minerals, amino acids, essential fatty acids, omega-3 and omega-6, fibre and various bioactive compounds, like resveratrol lycopene, and herbal extracts.

To supplement or not to supplement. That is the question.

Food supplements are intended to correct nutritional deficiencies, maintain an adequate intake or support specific physiological functions. They are not medicinal products but it is essential to know that they can have a pharmacological, immunological or metabolic effect.

For all supplements, we recommend that you consult a healthcare professional who will analyse your needs. Every supplement has to be monitored by an expert since excessive amounts of vitamins and minerals can have a toxic effect on the body.

But should I take supplements?

Let's say that you have changed your diet and you are consuming a healthy diet based on whole foods. Also, you reduced your stress levels, increased your physical exercise routine and started getting more sleep. Should these changes not be enough to ensure that we are on the path to a healthy lifestyle? Or could we potentially keep our bad habits and take a few magic pills to protect our health?

Nutritional supplements are just what the name suggests; they are supplementary. We cannot make up for poor lifestyle choices by taking pills, regardless of whether these pills are medicine or dietary supplements.

However, when they are taken properly, nutritional supplements can have a positive effect on our health and quality of life. You may well be thinking: “Well, I’m doing everything right so why would I need to take supplements?”

Yes, technically a diet containing plenty of whole foods should provide us with all the nutrients we need for excellent health. However, there is unfortunately still a wide range of modern-day environmental and lifestyle issues that make things much harder than they were in the past. Even when we think we are eating a balanced diet, we can often fall short nutritionally. This happens because our methods of getting food have changed over the years. With the combination of modern intensive farming methods, our modern lifestyles and the urban environments we live in, we consume fewer nutrients than we need, so many people need to take supplements.

Many nutritional supplements have been proven to prevent or treat health conditions like high cholesterol, heart disease, glucose metabolism and cancer. But supplementing our diet is about much more than nutrients such as vitamins and minerals. For instance, resveratrol and lycopene are antioxidant compounds that can help to prevent cardiovascular disease and cancer. So taking this kind of supplement may even help to prevent certain conditions.

Something else really important to think about is supplements for kids. Children need to get the full complement of vitamins and minerals from foods each day because their bodies are growing. These nutrients come from food and if they have a balanced diet, containing all the food groups, and their skin is exposed to sunlight every day then they do not need to take supplements. However, many children do not have access to or eat various foods that provide nutrients to meet their daily nutrient requirements. In these cases, supplements are required.

Summary of your risk of a micromineral imbalance

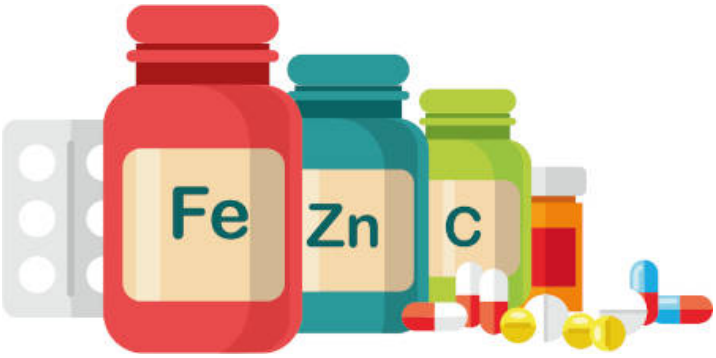
CATEGORY		RESULT
Ca	Calcium malabsorption risk	
Ca	Predisposition to dysregulated calcium levels	
Fe	Risk of iron overload	
Fe	Risk of low iron plasma levels	
Mg	Predisposition to dysregulated magnesium levels	
Se	Predisposition to dysregulated selenium levels	
Na	Sodium sensitivity	
A	Vitamin A	
B^6	Vitamin B6	
B^9	Vitamin B9 (folate)	
B^{12}	Vitamin B12	
C	Vitamin C	
D	Vitamin D	
E	Vitamin E	

INDICATIONS

LOW RISK | MEDIUM-LOW RISK | MEDIUM-HIGH RISK | HIGH RISK

Supplements

You will find some food supplement suggestions here based on your genetic results. Therefore, your supplements will be tailored to your needs, just like your diet plan. These suggestions are presented as a list, starting from the most strongly recommended food supplements down to the least important. The dosage and posology are not specified. This provides an indication for healthcare professions to give them a summary of what food supplements you should be taking. The following color scale shows what we recommend most strongly, with the color green indicating whether a supplement is more or less strongly recommended. It also shows the substances we do not recommend, from green to red, which indicates those that are not recommended because your body does not need them or there may be potential toxicity. It is important to emphasise that a healthcare professional must issue all supplement prescriptions and they will do so in a manner which is in accordance with your needs, current and previous diseases, blood tests and genetic results.



Why are some nutrient supplements combined?

In some cases, two or more is better than one, which is the case with Batman and Robin or the Three Musketeers. They were all better together than apart. This can also be the case with nutraceuticals.

The right combinations of different nutrients can provide a benefit for our body. This phenomenon is called nutrient synergy, which is a case of specific nutrients working together to produce a health benefit that is more significant than the individual parts. This happens because they can each enhance the absorption of the other substances or have more potent physiological effects when they work together. Pairing nutrients that have a synergy effect can help to reduce the risk of heart disease, stroke, osteoporosis and many other diseases.

An example of this is that of vitamins B6, B12 and B9. They act like buddies, working in harmony to reduce homocysteine levels, an amino acid that is linked to cardiovascular diseases. The lower the homocysteine level, the lower the risk of cardiovascular diseases. Also, this trio of B vitamins may help to maintain brain health and proper brain function. Another good example is calcium, vitamin D and vitamin K. Calcium is the nutrient responsible for building bones. But vitamin D is essential for calcium absorption and vitamin K acts like a traffic officer in the body, telling calcium it needs to go to the bones or get out of the body. The three nutrients need to be present for bone formation. Therefore, when these nutrients are put together in a supplement, each one enhances the action of the others, acting synergistically to improve your health.

On the other hand, when one nutrient reduces or inhibits the absorption of another nutrient in our body, this is called nutrient antagonism. If this is the case, these nutrients should not be taken or eaten together. For instance, high intake of zinc and calcium reduces iron absorption since the same protein absorbs them in our gut. Therefore, these minerals compete for the same absorption site.

CLEANING PHASE

- Magnesium
- Quercetina
- Papain
- Taurine
- Vitamin D3 (Cholecalciferol)
- Vitamin C
- Resveratrol

RESTRUCTURING PHASE

- Vitamin B2 (Riboflavine)
- Vitamin A
- Vitamin D3 (Cholecalciferol)
- Vitamin K2
- Vitamin B12
- Vitamin E
- Vitamin C
- Ubiquinol
- Resveratrol
- Niacin

SUPPLEMENTATION PHASE

- Magnesium
- Vitamin B2 (Riboflavine)
- Vitamin A
- Vitamin D3 (Cholecalciferol)
- Vitamin K2
- Melatonin
- Vitamin B12
- Vitamin E
- Vitamin C
- Ubiquinol
- Resveratrol
- Niacin

Together
we are creating the future
of personalized medicine.

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