ID: 00000000000

Genetics for people

Genetic Testing
Supplements and Vitamins

My *Supplements*

WHAT DOES THE GENETIC STUDY OF VITAMINS AND SUPPLEMENTS INCLUDE?

The Vitamins and Supplements genetic study analyzes a set of genetic variants in order to inform you, in a much more precise and personalized way, about which supplements and vitamins will help you feel better in your daily activities, focusing on those involved in the following physiological processes:

1. ENERGY INPUT

Increase available energy levels.

2. CHOLESTEROL AND TRIGLYCERIDES

To regulate cholesterol and triglyceride levels in the blood.

3. APPETITE AND SATIETY CONTROL

Control the feeling of hunger and satiety.

4. ANTIOXIDANT EFFECT

Help prevent the accumulation of oxidizing substances in the body.

5. FAT METABOLISM

Facilitate digestion and assimilation of fats.

6. PREVENTION OF INFLAMMATION

Prevent inflammatory response.

7.INJURY PREVENTION

Prevent the appearance of muscular injuries, in injuries and ligaments, etc.

8. REGULATION OF THE LEVELS OF VITAMINS B9 AND B12

Regulating the levels of vitamin B9 (folate) and B12, essential for the normalization of homocysteine.

9. SLEEP REGULATION

To favor the acquisition and quality of sleep.

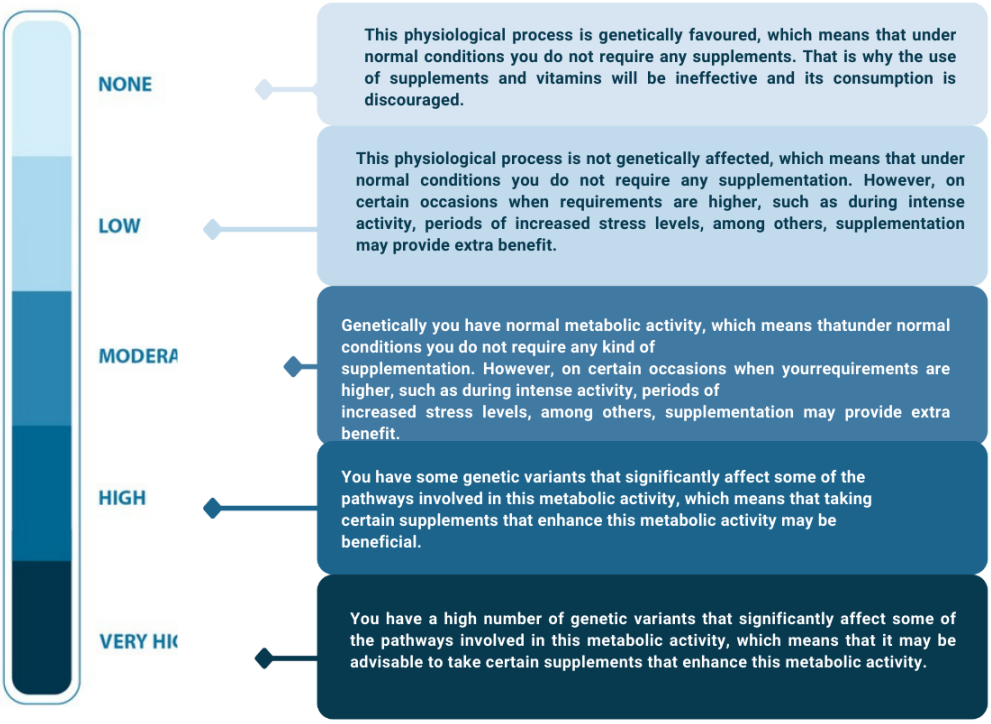
10. VASODILATION

Improve blood flow by dilatation of the blood vessels

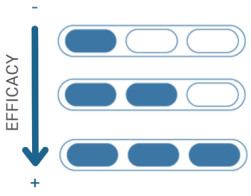
HOW TO READ THIS REPORT?

Over the following pages we offer you the report derived from the results of your DNA analysis. Based on the results of your analysis we will classify:

1. Your genetic predisposition to **need or not the use of supplements and vitamins in each of the physiological processes** considered.



2. **The efficacy or benefit that each of the 45 supplements and vitamins** analysed will provide you, in each physiological process, according to your genetics. In addition, the most recommended supplements according to your genetics are classified as follows:



STAR SUPPLEMENT

On the following pages you will find a table with a summary of your recommendation for each of the supplements and vitamins, section Summary of Results. For more information about the recommended supplements, such as applicability, intake form or toxicity, please go to the Detailed Results section.

NOTE: *Remember to select among the recommended or moderately recommended supplements those that suit your needs, and always consume them responsibly and in consultation with a professional.*

SUMMARY OF RESULTS

STATE OF YOUR PHYSIOLOGICAL PROCESSES

Below is the need for supplementation for each physiological process based on your genetic results:

1- Energy input

2- Cholesterol and triglycerides

3- Appetite and satiety control

4- Antioxidant effect

5- Fat metabolism

6- Prevention of inflammation

7- Injury prevention

8- Regulation of vitamin B9 and B12 levels

9- Sleep regulation

10- Vasodilatation

PERSONALISED SUPPLEMENTATION

ENERGY SUPPLY

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
Amylopectine		-	
Coenzyme Q10		-	
Glucose		-	
L-Carnitine		-	
Magnesium		-	
Maltodextrin		-	
Creatine monohydrate		-	
Vitamin B1		1 - 2 mg/day	★
Vitamin B3		-	

CHOLESTEROL AND TRIGLYCERIDES

SUPPLEMENT	EFFICACY	MAXIMUM DAILY INTAKE	STAR SUPPLEMENT
Omega 3		2 g/day	

APPETITE AND SATIETY CONTROL

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
Chitosan		-	
CLA		1 g/day of alpha-linolenic acid	★

Spirulina		-	
Garcinia cambogia		-	
Glucomannan		-	
Irvingia gabonensis		Responsible consumption	★
Omega 3		2 g/day	★
Chromium picolinate		-	
Proteins		-	
Zinc		11 mg/day	

ANTIOXIDANT EFFECT

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
Caffeine		-	
Catechins		-	
Curcumin		-	
Genistein		-	
Quercitin		-	
Vitamin B2		-	
Vitamin C		-	
Vitamin E		-	

FAT METABOLISM

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
Ursolic acid		-	
Caffeine		400 mg/day	
Chitosan		-	
CLA		-	
Spirulina		2 g/day	
Fucoxanthin		-	
Irvingia gabonensis		Responsible consumption	
L-Carnitine		2 g/day	★
L-Tyrosine		1.9 g/day	
Chromium picolinate		-	

INFLAMMATION PREVENTION

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
MSM		-	
Omega 3		-	

INJURY PREVENTION

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
BCAA		5 g/day	
Chondroitin		500 mg/day	
Glucosamine		500 mg/day	
Glutamine		2 g/day	
HMB		3 g/day	
Lysine		2,250 mg/day	★
Magnesium		-	
MSM		1 - 6 g/day	
Proline		2.8 mg/kg bodyweight/day	★
Vitamin C		90 mg/day	★

REGULATION OF VITAMIN B9 AND B12 LEVELS

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
Vitamin B9 (Folate)		400 μg/day	
Vitamin B12		2.4 μg/day	

VASODILATION

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
L-Arginine		3 g/day	
L-Citrulline		3 g/day during meals	
Organic nitrates		-	

SLEEP REGULATION

SUPPLEMENT	EFFICACY	RECOMMENDED DAILY INTAKE	STAR SUPPLEMENT
California poppy *Eschscholzia californica*		-	
Orange blossom		-	
Melatonine		-	
Lemon balm *Melissa officinales*		-	
L-Tryptophan		-	
Passionflower *Passiflora incarnata*		-	
Valerian *Valeriane radix*		-	

DETAILED RESULTS

1. ENERGY SUPPLY

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

VITAMIN B1

Vitamin B1 or **thiamine** is one of the vitamins of the B complex. These are water-soluble vitamins that are involved in many chemical reactions in the body. In particular, this vitamin helps the cells of the organism to transform the consumed carbohydrates into energy, affecting the growth, the development and the performance of the cells.

RECOMMENDATION: As a dietary supplement in adults, it is commonly used as **1-2 mg/day of thiamine**. The recommended intake of thiamine in men is 1.2 mg/day.

TOXICITY: No side effects have been reported.

WARNING: Some medications, such as furosemide or flourouracil, reduce thiamine levels in the body. Talk to your doctor or pharmacist about the dietary supplements and medications (prescription and non-prescription) that you take.

2. CHOLESTEROL AND TRIGLYCERIDES

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

OMEGA-3

Omega-3 fatty acids are a type of polyunsaturated fat essential in every stage of human life, necessary for the adequate performance of a large number of biochemical processes. Many studies have shown the capacity of omega-3 to reduce triglycerides and cholecterol in the organism.

RECOMMENDATION: AESAN recommends **consuming up to 2g/day of omega-3 from dietary supplements**. With a maximum intake of 3g/day of omega-3 (EPA and DHA combined).

TOXICITY: Omega-3 supplements are generally **free of negative side effects**. However, they may trigger mild gastrointestinal symptoms, such as passing gas from the mouth, indigestion or diarrhoea.

WARNING: Prolonged use may induce an increase in bleeding time, thus it is important to seek professional advice whenever taking medications such as anticoagulants or non-steroidal anti-inflammatory drugs.

3. APPETITE AND SATIETY CONTROL

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

CLA

The **Conjugated linoleic acid** (CLA) is a type of polyunsaturated fat represented by two interconnected molecules of linoleic acids. CLA supplementation may modify leptin levels through increasing satiety.

RECOMMENDATION: AESAN proposes a **maximum amount of alpha-linolenic acid of 1g/day**, with a linoleic acid/alpha-linolenic acid ratio of a maximum of 5 g/day.

TOXICITY: EFSA has classified this supplement as not harmful to health.

WARNING: In pregnant women, supplementation may be recommended in cases of low calcium doses. CLA has a synergistic effect with other fat-regulating and fat-reducing substances such as L-carnitine.

Irvingia gabonensis

Irvingia gabonensis, also known as African mango, is a nutrient-dense fruit from West Africa, rich in protein and fiber. The seed of this fruit helps to maintain adequate levels of leptin and adipoctine, responsible for regulating sattiety. Furthermore, it presents a high content of water-soluble dietary fiber so it can relieve constipation.

RECOMMENDATION: It is recommended to take it in a controlled way, avoiding its excess.

TOXICITY: It should be noted that African mango can cause adverse effects, such as: drowsiness, gassiness, dry mouth, headache, gastrointestinal problems.

WARNING: It must not be used by people allergic to any component of the plant. In addition, it may alter the effect of any medications you are taking such as those used for cholesterol, obesity, diabetes and especially anticoagulants.

OMEGA-3

The **Omega-3 fatty acids** are a type of polyunsaturated fat essential in every stage of life in the human being, indispensable for the proper performance of a large part of the biochemical pathways. Regarding appetite, these fats are necessary to prevent lowering of the leptin levels. Leptin is a hormone produce by fat cells, responsible for reporting the metabolic state of the body to the brain.

RECOMMENDATION: AESAN recommends **consuming up to 2g/day of omega-3 from dietary supplements**. With a maximum intake of 3g/day of omega-3 (EPA and DHA combined).

TOXICITY: Omega-3 supplements are generally **free of negative side effects**. However, they may trigger mild gastrointestinal symptoms, such as passing gas from the mouth, indigestion or diarrhoea.

WARNING: Prolonged use may induce an increase in bleeding time, thus it is important to seek professional advice whenever taking medications such as anticoagulants or non-steroidal anti-inflammatory drugs.

ZINC

Zinc is considered one of the most important elements for nutrition in humans, since it plays an essential role in metabolic processes such as the synthesis, storage and secretion of insuline, as well as in the action of leptin and therefore satiety.

RECOMMENDATION: The recommended amount is **11 mg/day**.

TOXICITY: The maximum recommended intake is 40 mg/day. Signs of excessive zinc ingestion include nausea, vomiting, loss of appetite, colic, diarrhoea and headaches. If excessive doses of zinc are taken over a long period of time, disorders such as poor copper levels, reduced immunity, and low levels of HDL cholesterol may occur.

WARNING: Dietary zinc supplements may interact or interfere with the medications you take and, sometimes, the medications may reduce the levels of zinc in your body.

4. ANTIOXIDANT EFFECT

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

You have a favourable genetic predisposition for this category. Supplementation for this category will not be of particular benefit, so no supplements or vitamins are recommended.

5. FAT METABOLISM

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

CAFFEINE

Caffeine is a stimulant capable of boosting alertness, increasing energy levels and accelerating fat metabolism, which helps burning calories. It also stimulates the sympathetic nervous system and increases lipid degradation.

RECOMMENDATION: The recommendation is **400 mg/day**. For sports performance, it is advised to be consumed 45 minutes to 1 hour before exercise.

TOXICITY: Intake of more than 5 g/day (a 150 ml cup of coffee contains between 64 and 124 mg of caffeine, depending on its purity) can lead to: hypertension (and possibly hypotension), tachycardia, sweating, nausea, vomiting, metabolic disorders, neurological disorders. Despite this, you have a **rapid metabolisation of caffeine**, which means you have a **lower risk of developing cardiovascular diseases due to the effect of caffeine**.

WARNING: Continued caffeine consumption could lead to tolerance.

CARNITINE

L-carnitine is a molecule involved in fat metabolism, responsible for transferring long-chain fatty acids into the mitochondria, where they are oxidised. The body is able to synthetise carnitine, but a deficiency could lead to an increase in adipose tissue and a reduction in energy production.

RECOMMENDATION: AESAN recommends a maximum daily consumption of 2 g using L-carnitine, L-carnitine hydrochloride as source and 3 g if L-carnitine tartrate is used as source.

TOXICITY: Intakes of 4-6 g/day, and in particular doses higher than 15 g/day, of L-carnitine can cause gastrointestinal disturbances.

WARNING: Acetyl-L-carnitine may interfere with thyroid metabolism, therefore supplementation with any form of acetyl-L-carnitine would not be advisable in people on medication for thyroid disease or with any thyroid pathology.

SPIRULINA

Spirulina is a satiating algae capable of expanding in the stomach, providing a feeling of satiety. Furthermore, it provides minerals, vitamins and proteins of high nutritional value for the organism. It has also been shown to regulate genes involved in lipid metabolism and is likely to reduce the process of adipose tissue formation (adipogenesis), thus helping to control body mass index and weight.

RECOMMENDATION: The recommended dose is de 2 g/day. Despite this, spirulina has been shown to be effective at various doses (0.5-20 g/day).

TOXICITY: FDA has classified this food as not harmful to health.

WARNING: No warnings associated with its use have been reported.

Irvingia gabonensis

Irvingia gabonensis, also known as African mango, is a nutrient-dense fruit from West Africa, rich in protein and fiber. The potential health benefits of *I. Gabonensis* are related to its ability to inhibit adipogenesis and its strong thermogenic effect, which accelerates basal metabolism and fat burning due to an increase in body temperature. As a result, adipose tissue in the abdomen is reduced.

RECOMMENDATION: It is recommended to take it in a controlled way, avoiding its excess.

TOXICITY: It should be noted that African mango can cause adverse effects, such as: drowsiness, gas, dry mouth, headache, gastrointestinal problems.

WARNING: It must not be used by people allergic to any of the plant's components. In addition, it may alter the effect of any medications you are taking such as those used for cholesterol, obesity, diabetes and especially anticoagulants.

TYROSINE

Tyrosine is a non-essential amino acid responsible for stimulating the production and release of hormones such as epinephrine, norepinephrine and catecholamines. These hormones promote the process of lipolysis and thermogenesis, activating the metabolism of fats and thus helping to lose body weight.

RECOMMENDATION: The maximum intake for the combination of L-tyrosine and L-phenylalanine is 1,900 mg/day.

TOXICITY: Several studies have shown that L-tyrosine is **safe up to a dose of 150 mg/kg bodyweight/day** producing only minor side effects (nausea, diarrhoea, headaches or insomnia) in some people.

WARNING: L-tyrosine may affect the absorption of some antidepressant drugs and aggravate cases of hyperthyroidism. There are no studies on the intake of L-tyrosine in pregnant women.

6. INFLAMMATION PREVENTION

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

You have a favourable genetic predisposition for this category. Supplementation for this category will not be of particular benefit, so no supplements or vitamins are recommended.

7. INJURY PREVENTION

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

BCAA

BCAA is the abbreviation for **"branched-chain amino acids"**. This group is composed of three essential amino acids: leucine, isoleucine and valine:

- Leucine plays an important role in muscle synthesis during physical exercise and strengthens the immune system.
- Isoleucine contributes to muscle protein synthesis and promotes muscle recovery by preventing fatigue.
- Valine promotes tissue healing.

RECOMMENDATION: A balanced protein-rich diet can easily provide **10 a 20 g/day** of BCAAs. Taking a further 20g/day of BCAAs in the form of a food supplement is considered safe, although the AESAN recommends not to exceed the maximum daily dose of 5g.

TOXICITY: BCAAs are considered safe when taken orally properly. But they can produce certain side effects, such as fatigue, loss of coordination, stomach problems, including nausea, vomiting, diarrhoea and bloating. In rare cases, branched-chain amino acids can cause high blood pressure, headache or skin whitening.

WARNING: There is not enough information or studies on the safety of taking BCAAs if you are pregnant or breastfeeding. The use of BCAAs is not recommended in patients with amyotrophic lateral sclerosis as it has been linked to lung failure. Branched-chain amino acids may affect blood sugar levels.

CHONDROITIN

Chondroitin sulphate is a polysaccharide widely used for the regeneration of cartilage around joints, so it is commonly used in people with osteoarthritis or a predisposition to joint fractures, as it may delay them.

RECOMMENDATION: The recommended intake of sulphates as a food supplement is **500 mg/day**. Nowadays there is an authorised medicinal product with a dosage of 800 to 1,200 mg/day and in order not to interfere with the therapeutic use of this substance, the maximum daily amount of chondroitin should be set at a lower limit than the therapeutic limit.

TOXICITY: Chondroitin sulfate supplementation is probably safe in most adults, although it may cause mild stomach pain and nausea. Other reported side effects include bloating, diarrhoea, constipation, headache, swollen eyelids, leg swelling, hair loss, rashes and irregular heart rate.

WARNING: Do not use by children, pregnant or breastfeeding women due to the lack of studies in these population groups. Particular caution should be exercised by people with: asthma, coagulation disorders and prostate cancer. Furthermore, it is not recommended to be taken in combination with Warfarin.

GLUCOSAMINE

Glucosamine is a natural substance present in the body that forms part of the matrix surrounding all connective tissues including cartilage. Glucosamine can be effective in relieving pain caused by arthrosis and in the rehabilitation process of injuries in connective tissue, helping in the formation of tendons, ligaments, cartilage and the fluid that surrounds the joints.

RECOMMENDATION: It is recommended a **maximum dose of 500 mg** glucosamine sulphate or hydrochloride.

TOXICITY: Glucosamine sulphate is probably safe in most adults, although it can cause certain side effects such as nausea, heartburn, diarrhoea and constipation. Other uncommon side effects include drowsiness, skin reactions and headache.

WARNING:

- Children, adolescents and pregnant or breastfeeding women should not take it.
- People with: asthma, diabetes, glaucoma, high cholesterol levels, hypertension, allergic to seafood or undergoing surgery should be especially cautious in its use.
- It is not recommended to take it in combination with Warfarin or antimitotic chemotherapy drugs.

GLUTAMINE

L-glutamine is a non-essential amino acid found mainly in muscle tissue. It is used as a supplement during training and particularly for post-workout recovery. This amino acid increases the rate of protein synthesis, promoting the growth and maintenance of muscle mass and helps muscle glycogen stores to recover more quickly after intense exercise and muscle tissue after exercise.

RECOMMENDATION: AESAN recommends a **maximum amount of 2 g of L-glutamine**.

TOXICITY: It is a safe substance with no significant adverse effects.

WARNING: High doses of L-glutamine may hinder liver and kidney processing in the elderly.

HMB

Beta-hydroxy-beta-hydroxy-beta-methylbutyrate, better known as **HMB**, is a natural metabolite derived from the amino acid leucine. This compound is used as a supplement because it has beneficial effects on muscle recovery, particularly after intense and prolonged physical activity sufficient to cause muscle injury.

RECOMMENDATION: AESAN recommends a **maximum daily amount of 3 g** in three equal 1g servings. HMB comes in two forms: one with calcium and one without. A 3g serving with calcium provides about 400 mg of calcium.

TOXICITY: It is a safe substance with no significant adverse effects.

WARNING: No warnings have been reported in association with its use.

LYSINE

L-lysine is an essential amino acid, so it is necessary to include it in the diet to avoid deficiencies. Lysine is incorporated into collagen (involved in the development and repair of tendons and ligaments) to give it consistency. It is also involved in protein synthesis, intestinal calcium absorption and is a precursor of L-carnitine.

RECOMMENDATION: AESAN has recommended a **maximum amount of 2,250 mg/day of L-lysine**, based on the protein reference intake recommended by the WHO for the adult population.

TOXICITY: Daily doses up to 2,250 mg are considered acceptably safe as a food supplement.

WARNING: Not recommended during pregnancy and lactation, for children, or for prolonged periods of time without medical supervision.

MSM

Methylsulfonylmethane (MSM) is a chemical found in leafy green vegetables and greens. It has been found to be effective agains arthritis, an inflammatory disease characterised by joint pain, swelling, stiffness and redness. Furthermore, it has the ability to reduce acute inflammation of the muscle and cartilage.

RECOMMENDATION: The recommended dose of MSM is **between 1-6 g/day**, although in some it may be recommended to increase the dose up to 20 g/day.

TOXICITY: No side effects have been reported.

WARNING: No warnings have been reported in association with its use.

PROLINE

L-proline is a non-essential amino acid that is a fundamental part of the structure of collagen, involved in the repair and maintenance of tendons and ligaments and essential for the osteo-articular system.

RECOMMENDATION: The recommended **maximum amount of L-proline supplementation is 2.8 mg/kg bodyweight/day**, equivalent to approximately 200 mg/day.

TOXICITY: High doses are reported to cause liver and kidney changes, adverse effects on the nervous system and oxidative damage to DNA, proteins and blood lipids.

WARNING: Do not administer proline to individuals with congenital hyperprolinaemia, especially children.

VITAMIN C

Vitamin C is an essential water-soluble vitamin necessary for the development and repair of several tissues in the body. In particular, it has been found to be involved in the production of skin, tendons, ligaments and blood vessels, as well as aiding in the repair of cartilage and bone.

RECOMMENDATION: The necessary amount of vitamin C in adult men is **90 mg/day**.

TOXICITY: Vitamin C intake in doses higher than 2 g/day may cause diarrhoea, nausea and stomach cramps.

WARNING:

- Vitamin C dietary supplements may interact or interfere with certain medications you take. For example: cancer treatments, such as chemotherapy and radiation therapy. If you are being treated for cancer, talk to your healthcare professional before taking vitamin C supplements or any other antioxidants.
- In people with haemochromatosis, a disorder that causes too much iron to build up in the body, high doses of vitamin C may increase the excess iron and damage the body's tissues.
- Health professionals should monitor lipid levels in people taking statins and antioxidant supplements.

8. REGULATION OF FOLATE AND B12 LEVELS

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

VITAMIN B9

Vitamin B9 also known as **folate**, is a water-soluble vitamin, that functions as a coenzyme in the synthesis of nucleic acids and in the metabolism of amino acids. Folate is involved in one of the DNA-forming reactions and its deficiency can lead to the development of megaloblastic anaemia.

RECOMMENDATION: The recommended intake of vitamin B9 in adults is **400 μg/day of DFE**. DFE are dietary folate equivalents, as the body absorbs more folic acid from fortified foods and supplements than from naturally present folate in foods. 400 μg of DFE equal 240 μg of folic acid and 400 μg of folate.

TOXICITY: Most adults have no adverse effects when consuming doses of less than 600 μg/day. Although side effects of folate are not common, the following may occur: rash, itching, redness of the skin, or difficulty breathing. Tell your doctor if any of these symptoms become severe or do not go away.

WARNING: Folate may interfere with drugs such as: 5-Fluorouracil, Capecitabine (Xeloda®), Phenytoin (Dilantin®), Phenobarbital (Luminal®), Phosphenytoin (Cerebyx®), Methotrexate (Trexall®, others), Pyrimethamine (Daraprim®), Primidone (Mysoline®). In addition, green tea may interfere with the functioning of folic acid in the body.

VITAMIN B12

Vitamin B12 or cobalamin is a nutrient used to keep the neurons healthy and proper production of red blood cells. It also contributes to the synthesis of DNA, the genetic material present in each and every cell.

RECOMMENDATION: The recommended intake of vitamin B12 for adults is **2.4 μg/day**.

TOXICITY: Due to the low toxicity of vitamin B12, no side effects have been reported.

WARNING: Vitamin B12 may interact or interfere with medications such as chloramphenicol, proton pump inhibitors (omeprazole and lansoprazole), histamine H2-receptor antagonists (ranitidine, cimetidine, famotidine) and metformin. Contact your doctor or pharmacist about the dietary supplements and medicines you take.

9. SLEEP REGULATION

GENETIC PROFILE AND SUPPLEMENTATION NEEDS

RECOMMENDED SUPPLEMENTS AND VITAMINS

You have a favourable genetic predisposition for this category. Supplementation for this category will not be of particular benefit, so no supplements or vitamins are recommended.

10. VASODILATION

GENETIC PROFILE AND SUPPLEMENTATION

RECOMMENDED SUPPLEMENTS AND VITAMINS

ARGININE

L-Arginine is a semi-essential amino acid, therefore, in adults with an adequate protein intake, its synthesis is sufficient to cover physiological needs. However, in some states with high nutrient demand or during periods of rapid growth, the body's needs may exceed the organism's synthesis capacity. One of the characteristics of this amino acid is that it can be converted into **nitric oxide**, which is involved in the dilation of blood vessels, thus improving blood flow. Increased blood flow delivers oxygen and nutrients to the muscles being exercised and speeds up the evacuation of fatigue-causing waste products. L-arginine is often used by athletes as a supplement to immediately activate muscles to give them a larger appearance.

RECOMMENDATION: AESAN recommends a **maximum dose of 3g**. Despite this, arginine supplements are considered safe when users take up to 9g/day for a few days or weeks..

TOXICITY: AESAN has declared L-arginine safe for consumption, although it may cause gastrointestinal discomfort and slightly lower blood pressure.

WARNING: It may trigger adverse reactions if combined with medicines for hypertension, heart, diuretics, medicines or herbal products for cough, cold and flu and other medicines such as: sildenafil, vardenafil, tadalafil. Consult your doctor before use if you are taking any of these medicines.

CITRULLINE

L-Citrulline is a non-essential amino acid, precursor of the amino acid L-arginine. As a result, L-citrulline is capable of being ultimately converted into nitric oxide, which has a vasodilatory effect on the body. The expansion of blood vessels increases blood flow and delivers oxygen and nutrients to exercising muscles and accelerates the evacuation of waste products that cause muscle fatigue.

RECOMMENDATION: As a precursor of L-arginine, the AESAN recommends a **maximum daily dose of 3g** taken during meals.

TOXICITY: EFSA has classified this supplement as not harmful to health.

WARNING: Avoid use for more than 4 weeks. Not recommended during pregnancy and lactation.

GENETIC RESULTS

GENE	YOUR GENOTYPE	GENE	YOUR GENOTYPE
ACE	ID	**GDF5**	AA
ACTN3	CC	**GDF8**	TC
ADRB2.1	GG	**GHR**	GG
ADRB2.2	GG	**GNB3**	CC
ADRB3	AA	**GSTM1**	II
AGT	AG	**GSTT1**	II
AMPD1	GG	**HIF1A**	CC
APOA2	GA	**IL6**	GG
APOA5	AA	**MC4R.1**	TC
BDKRB2	CC	**MC4R.2**	CC
CKM	TC	**MNSOD**	GG
COL1A1	CC	**MTHFR**	GA
COL5A1	TT	**NOS3**	TT
CRP	CC	**NRF2**	AG
CYP1A2.1	GG	**NYP**	TT
CYP1A2.2	AA	**PLIN1**	CT
ELN	TC	**PPARA.1**	CC
FABP2	TC	**PPARA.2**	GG
FTO.1	TC	**PPARG**	CC
FTO.2	GT	**PGC1**	CC
FTO.3	TA	**VEGFA**	GG

TECHNOLOGY

DNA Microarray technology consists of a solid surface with microscopic reactions (microreactions) or DNA chip, on which molecular probes are attached to detect the presence of target DNA molecules. Probe-target hybridization is usually detected and quantified by measuring the intensity of a given fluorescence provided by the molecular probe in samples. This type of technology allows the detection of thousands of specific DNA fragments present in a DNA sample. On the other hand, the specificity in terms of DNA sequence recognition is very high since single nucleotide exchange (single-base resolution) can be detected using short oligonucleotide probes (20-25 nucleotides). As a result, DNA Microarray technology has also evolved to be applied as a DNA sequencing technique to genotype several hundred thousand single nucleotide variants (SNVs) in target genes located throughout the genome (Whole Genome DNA Microarray).

Bead Chip Infinium Global Screening Array Orion (GSA Orion) is a line of DNA chips developed by Illumina for its DNA Microarray iScan platform, widely used in population genetic studies and precision medicine, providing optimized content with 100% reliable and reproducible high-quality genotyping results. The construction of the GSA Chip was carried out in collaboration with a consortium of experts, and for the selection of SNVs, information from prestigious scientific databases such as gnomAD, NHGRI-EBI-GWAS Catalog, ClinVAr, MHC-HLA-KIR and PharmGKB has been used. The GSA allows the analysis of approximately 700,000 SNVs that cover variants of interest (hot spots) throughout the entire genome, impacting a wide range of genetic traits with physiological and pathophysiological implications. In addition, it allows the customization by users to incorporate Ad Hoc 50,000-100,000 variants of interest.

RISKS AND LIMITATIONS

This report has been elaborated using official documentation from Food Safety Committees managed at national and European level and, in some cases, by regulatory bodies such as the FDA or the EMA. Furthermore, the latest scientific publications have been taken into account for each of the supplements and vitamins shown in the report. Despite this, these food supplements are subject to continuous review, so it is recommended to pay attention to the dosage of the supplement to be consumed and if the symptoms persist over time, seek professional advice.

The information in this report is of clinical nature and should not be considered medical advice. To make the best use of the information contained in this report, consider consulting with your doctor or health care professional for interpretation of the results based on your medical history and personal circumstances.

The response to supplements and vitamins is affected by other factors such as concomitant drug treatments (when two or more drugs are administered at the same time), diseases, age, gender, lifestyle, etc.

The purpose of the test is to provide information on the efficacy of supplements and vitamins based on your genetic profile. Possible uses, warnings, side effects or interactions with other drugs or other vitamin and herbal supplements published to date are included in this report. For more information on possible contraindications, please consult your doctor.

GLOSSARY OF TERMS

You can find below a list of links to the different regulatory bodies mentioned throughout the report:

- Spanish Agency for Food Safety and Nutrition (**AESAN**): aesan.gob.es

ANNEX: GENERAL RECOMMENDATIONS FOR MAXIMUM DOSES

LIST OF VITAMINS	
VITAMINS	MAXIMUM DAILY DOSE
1. Vitamin B1 (Thiamine):	the recommended intake is 1,5 mg/day as a supplement, but no maximum dose has been established as it is probably safe at high doses
2. Vitamin B2 (Riboflavin):	the recommended intake is up to 2 mg/day as a supplement, but no maximum dose has been established as it is probably safe at high doses
3. Vitamin B3 (Niacin):	the upper daily limits from dietary supplements are 10 mg for children between 1 and 3 years old, 15 mg for children between 4 and 8 years old, 30 mg for children between 9 and 13 years old, and 35 mg for adults over 19 years old
4. Vitamin B9 (Folate):	the maximum tolerable level of folic acid is 180 μg for children between 1-3 years old, 240 μg for children between 4-8 years old, 360 μg for children between 9-13 years old, 480 μg for teenagers between 14-18 years old, and 600 μg for individuals over 18 years old
o **5. Vitamin B12:**	the maximum recommended dose is 2,8 μg/day as a supplement, but no maximum dose has been established as it is probably safe at high doses
6. Vitamin C:	the maximum recommended dose is 400 mg for children between 1 and 3 years old, 650 mg for children between 4 and 8 years old, 1,200 mg for children between 9 and 13 years old, 1,800 for teenagers between 14 and 18 yeras old, and 2,000 mg for adults
7. Vitamin E:	the maximum limit for adults is 1000 mg/day in natural vitamin E supplements or 495 mg/day in its synthetic form

LIST OF SUPPLEMENTS	
SUPPLEMENTS	MAXIMUM DOSE
1. Conjugated linoleic acid (CLA):	1 g/day of alpha-linolenic acid, with a ratio of linoleic acid/alpha-linolenic acid of maximum 5 g/day
2. Ursolic acid:	450 mg/day as a supplement, but no maximum dose has been established as it is probably safe at high doses
3. Amylopectin:	maximum doses of 50 g/day as a supplement have been established as safe
4. BCAA:	doses of 5 g/day as a supplement are safe
5. Caffeine:	ingestion of doses higher than 5 g/day may cause adverse effects
6. Catechins:	the maximum daily dose should be less than 800 mg/day
7. Chitosan:	the maximum recommended dose is 3 g/day
8. Coenzyme Q10:	the maximum recommended dose is 200 mg/day
9. Chondroitin:	the recommended dose is 500 mg/day as a supplement, but no maximum dose has been established as it is probably safe at high doses
10. Curcumin:	doses up to 600 mg/day are safe
11. Spirulina:	doses up to 20 g/day are effective and it is considered a safe food
12. Fucoxanthin:	doses up to 750 mg/kg taken daily for 4 weeks show no relevant toxicity signs

LIST OF SUPPLEMENTS (CONTINUED)	
SUPPLEMENTS	MAXIMUM DOSE
13. *Garcinia cambogia*:	the maximum recommended dose is 2,800 mg/day
14. Genistein:	doses up to 80 mg/day are safe
15 Glucomannan:	maximum recommended dose is 4 g/day, avoid doses higher than 5 g/day
16. Glucose:	WHO recommends a total carbohydrate intake of 50 g, although for physical activity longer than one hour, 30-60 g/hour are necessary
17. Glucosamine:	glucosamine at doses up to 1,500 g/day is usually considered to be safe
18. Glutamine:	recommended maximum daily dose is 2 g of L-glutamine
19. HMB:	recommended maximum daily dose 3 g
20. *Irvingia gabonensis*:	health organisations recommend a controlled intake
21. L-Arginine:	recommended maximum daily dose 3 g
22. L-Carnitine:	recommended maximum daily dose of 2 g using L-carnitine, L-carnitine hydrochloride as sources and 3 g using L-carnitine tartrate as source
23. L-Citrulline:	recommended maximum daily dose 3 g
24. L-Lysine:	recommended maximum daily dose 2.25 g
25. L-Tyrosine:	recommended maximum daily intake for the sum of L-tyrosine and L-phenylalanine of 1.9 g
26. L-Tryptophan:	recommended maximum daily dose 300 mg
27. Magnesium:	the recommended maximum daily limit is: up to 80 mg for children between 1 and 3 years old, 130 mg for children between 4 and 8 years old, 240 mg for children between 9 and 13 years old, and up to 420 mg for adults
28. Maltodextrin:	8-10 g/kg/day in combination with other carbohydrates
29. Melatonin:	recommended daily dose 1 mg
30. Methylsulfonylmethane (MSM):	recommended maximum daily dose up to 20 g
31. Creatine monohydrate:	recommended maximum daily dose 6 g
32. Organic nitrates:	the recommended intake of nitrate has been set at 3.7 mg/kg bodyweight/day
33. Omega 3:	recommended maximum daily dose 3 g (EPA and DHA combined)
34. Chromium picolinate:	recommended maximum daily dose 1,000 μg
35. Proline:	recommended maximum dose 2.8 mg/kg bodyweight/day
36. Protein:	up to 2 g/kg bodyweight/day
37. Quercetin:	recommended maximum daily dose 300 mg
38. Zinc:	the maximum recommended daily dose is: 3 mg for children between 1 and 3 years old, 5 mg for children between 4 and 8 years old, 8 mg for children between 9 and 13 years old, and 9 mg for adults

Genetics for people

Contact:

Scientific Park
Valencia University

St, Agustín Escardino Benlloch, 9
Paterna, Valencia

(+34)96 321 77 58
info@overgenes.com

www.overgenes.com