



# Detox and Beauty Plan

*YOUR NAME*

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Dear ...,

Your genes have been successfully analyzed and this report contains straightforward information about your body's capacity to deal with factors like oxidation, pollution, toxic substances, environmental exposures. You will also find detailed information about your skin and which individualized care your body needs to combat premature ageing.

The insights from this report enable you to outsmart your genes by choosing adapted supplementation and cosmetics that are right for you and for you alone. By giving your body and skin exactly what it needs, your youth will replenish and will allow you to live a longer and more vibrant life.

We remind you that any changes you want to make in your diet or skin treatment should be discussed with a health professional. The information provided in this report is valid only for research, information and educational use. It is not valid for clinical or diagnostic purpose.

In the first pages you will find a summary of the analyzed subjects and results, which are discussed with more detail in later pages. At the end is a summary of recommendations for your health and beauty. The iconic meters next to each topic indicate whether your genes are beneficial (green) or unfavorable (red) for your health.

Now we invite you to start your genetic journey and discover yourself through your genes.

## SUMMARY

DERMAL SENSITIVITY (red = high, green = low sensitivity)



POLLUTION PROTECTION (red = low, green = high protection)



ANTIOXIDANT CAPACITY (red = low, green = high capacity)



ACNE (red = high risk, green = low risk)



INFLAMMATION (red = high, green = low susceptibility)



FRECKLES (red = high, green = low predisposition)



VARICOSE VEINS (red = high, green = low predisposition)



GLYCATION PROTECTION (red = low, green = high protection)



CELLULITIS (red = high, green = low risk)



SUN SENSITIVITY (red = high, green = low sensitivity)



TANNING CAPACITY (red = low, green = high capacity)



SUNSPOTS (red = high, green = low sensitivity)



PHOTO-AGEING (red = fast, green = slow ageing)



VITAMIN B<sub>9</sub> (red = risk of deficiency)



VITAMIN B<sub>12</sub> (red = risk of deficiency)



VITAMIN C (red = risk of deficiency)



VITAMIN D (red = risk of deficiency)



VITAMIN E (red = risk of deficiency)



OMEGA 3 AND OMEGA 6 (red = risk of deficiency)



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## SKIN CARE

### Dermal sensitivity

The skin functions as a permeable barrier that prevents the entry of harmful pathogens and toxins. A hyperreactive immune response to allergens and deficiencies in protection against environmental toxins, contribute to the overall risk of dermal sensitivity. In some cases, dermal sensitivity results in atopic dermatitis or eczema, which is the most common skin involvement, with a prevalence of up to 20% in children and 3% in adults in developed countries. People living in cities and in dry climates are more susceptible to this disease. Atopic dermatitis is characterized by very dry skin and inflammatory lesions, which are frequently infected by bacteria and viruses. It is important to consult with a dermatologist if you have these symptoms.

Genetic and environmental factors appear to be the cause of increased dermal sensitivity. Your overall risk is calculated using the results of a large-scale study in which a number of genetic variants associated with increased risk have been identified.

Genes analyzed: IL18, ADAD1, EPHX1.



You have variants related to an increase in dermal sensitivity. Some products / nutrients with anti-inflammatory properties include omega-3 fatty acids, evening primrose oil or Boswellia. We recommend the use of organic creams for sensitive skin. Phototherapy is used for cases with atopic dermatitis.

## Protection against pollution

Environmental pollution causes signs of ageing on the skin, dark spots and inflammation. Two important enzymes (EPHX<sub>1</sub> and NQO<sub>1</sub>) protect the skin and body from highly reactive external chemicals (epoxides and quinones).

The enzyme EPHX<sub>1</sub> prevents the absorption of epoxides by converting them into less reactive, water-soluble forms. The enzyme NQO<sub>1</sub> converts coenzyme Q<sub>10</sub> (ubiquinone) to its reduced form, ubiquinol, which captures free radicals in the mitochondria and in the lipid membrane of the skin. This enzyme detoxifies quinones by converting them into reduced forms that can be excreted. On the skin, both enzymes play an important role in preventing the outer layer (the epidermis) from absorbing toxins.

Genetic variations in the EPHX<sub>1</sub> gene may cause deficiency in its function and in the NQO<sub>1</sub> gene decrease the production of ubiquinol. People with reduced levels of these two enzymes have significantly reduced skin protection against environmental toxins.

Genes analyzed: EPHX<sub>1</sub>, NQO<sub>1</sub>.



You have good protection against external agents that can cause damage to your skin.

## Antioxidant capacity

A balance between free radicals and antioxidants is necessary for a proper physiological function, as well as for a healthy and youthful looking skin. In the skin, the increase of free radicals (called oxidative stress) causes a breakdown of collagen - a structural support of the skin - and alters the cycle of cell regeneration, causing premature ageing (dull complexion with spots and non-uniform texture). Free radicals can affect all layers of the skin (hypodermis, dermis and the epidermis which is particularly vulnerable).

The antioxidant machinery present in the skin is started when there is oxidative stress, turning the harmful free radicals into less harmful products. Antioxidants are the natural defense of our body to minimize the damage caused by free radicals and can drastically reduce some signs of ageing: reduce wrinkles and preserve the natural shine of the skin. Genetic variations encoding antioxidant enzymes (SOD<sub>2</sub>, EPHX<sub>1</sub>, CAT and NQO<sub>1</sub>) have been associated with an increased risk of oxidative stress or a reduction in antioxidant activity, which increases the ageing of the skin.

Genes analyzed: CAT, NAO<sub>1</sub>, SOD<sub>2</sub>, EPHX<sub>1</sub>, CAT.



The overall antioxidant capacity of your skin is average, some genetic variants are beneficial whilst others decrease the antioxidant power of your skin. Your skin would benefit from some extra antioxidant supplements.

## Acne

Acne is the most common skin disease, very common among adolescents and young people, although it can also occur in adults. It affects the sebaceous glands, connected to the pores of the skin through a channel called follicle. These glands produce a fatty substance called sebum, which transports dead cells to the surface of the skin through the follicle. When a follicle is clogged, a pimple is created and the bacteria inside the follicle cause swelling.

The treatment focuses on healing the grains, preventing new ones from forming and preventing scarring. There are anti-acne medications that are applied directly to the skin or as supplements.

In addition to hormonal changes, stress, certain medications or the use of greasy makeup, there are hereditary factors that contribute to the onset of acne. Variations in different genes contribute to this skin disorder.

Genes analyzed: NQO1, SELL, TGFB2.



Your genetic results predispose you to having acne.

## Inflammation of the skin

Skin inflammation occurs when skin cells have a hyperreactive response to allergens or toxins. Acute inflammation is a natural reaction to repair the skin after being exposed to environmental infections or toxins, and usually lasts a few days. While it is a useful short-term response, if inflammation continues it can play a negative role. When the inflammation is chronic it begins to be destructive and damages the skin.

There are numerous stimuli that induce chronic inflammation: UV rays, stress, toxins, tobacco, alcohol, pathogen infections, excess free radicals. While inflammation is the first line of defense of the skin, excessive inflammatory response causes premature ageing of the skin.

Signs include dermal tenderness, redness, and irritation. Genetic variations in various proinflammatory and anti-inflammatory genes are associated with an increased risk of chronic skin inflammation.

Genes analyzed: IL18, IL6, IFNG, ADAD1, IL10.



Your genetics predisposes you to a lower risk of having an excessive inflammatory response on the skin.

## Freckles

Freckles are hyperpigmented spots that often appear on the face, neck, thorax, and arms. They are the result of an increase in the production of melanin in the skin. They usually appear in childhood but decrease with age and darken with sun exposure.

Freckles are common among the Caucasian population and more frequent in light-skinned and redhaired people, with difficulty in tanning, increased likelihood of sunburn and sun spots (sun lenses), as well as the possibility of malignant melanoma and skin cancers in melanomas.

Freckles are associated with genetic variations in the IRF4 and MC1R genes. The MC1R gene contributes the most to red hair and fair skin.

Genes analyzed: IRF4, TYR.



Your risk of having freckles is medium.

## Varicose veins

Varicose veins are small veins that have a strong purple-blue color and extend into the skin as roots (known as spider veins). They affect more than a third of the world's population and can cause pain, itching, ulceration or venous thrombosis.

There are very simple measures to avoid the formation of varicose veins such as exercising regularly, maintaining a healthy diet, avoiding standing or sitting for prolonged periods, and raising your legs. Women should also avoid crossing their legs.

People who have a family history of varicose veins are more likely to have them. Genetic variations in the MTHFR gene have been associated with an increased risk of developing varicose veins. Other non-genetic risk factors are obesity, age, sitting or standing for a long time and hormonal changes.

Genes analyzed: MTHFR.



Based on your genotype, the likelihood of you having varicose veins is medium.

## Protection against glycation

Our body uses glucose as the main source of energy, but if it is not properly metabolized, it can bind to the collagen and elastin fibers and modify them both structurally and functionally. The resulting products are known as advanced glycation products (AGEs).

This process called glycation is involved in the ageing of the skin and damages its ability to regenerate and self-repair. The collagen fibers that have undergone glycation become rigid, less elastic and have a lower capacity for regeneration, causing wrinkles, dryness, thickening of the skin and loss of firmness. AGEs increase with age and are more harmful in combination with exposure to UV rays.

Glycation can be reduced by controlling blood glucose levels, LDL cholesterol and triglycerides through a proper diet. Variations in the genes that determine how our body processes sugar can alter the normal functioning of energy metabolism and glucose levels. Scientists have identified variations in genes like GLO1 and AGER associated with an excess of AGE.

Genes analyzed: AGER, GLO1.



Your genotype predisposes you to a high risk of glycation in the skin. The use of creams with carnosine, niacinamide, green tea and  $\alpha$ -lipoic acid decreases the effects of advanced glycation.

## Cellulitis

Cellulite is a common cosmetic problem for many women (80-90%) characterized by alterations in the surface of the skin that give an uneven appearance, unattractive, due to irregular fibrous tissue and accumulation of subcutaneous fat, resulting in known as "orange peel". It mainly affects the buttocks, hips and thighs, although it can also affect other parts of the body such as the abdomen.

Caucasian women are more likely to have cellulitis than Asian women. The causes are complex and involve hormonal factors, circulatory system, extracellular matrix, inflammation and substances produced by adipocytes, genetic predisposition and weight changes.

To minimize cellulite, it is recommended to maintain a healthy weight, stay active, follow a healthy diet and be hydrated. Certain anti-cellulite creams, massages and medical-aesthetic treatments are beneficial to treat this disorder. Variations in the HIF1A gene, among others, have been associated with the risk of developing cellulite.

Genes analyzed: HIF1A.



You do not have the protective genotype, so your predisposition to have cellulite is average. Caffeine is a very common component among anti-cellulite creams. Other ingredients are tetrahydropropyl ethylenediamide (THPE), retinol and / or red algae and glaucine. There are numerous formulations, consult with your beauty consultant.

## *THE SUN AND YOUR SKIN*

### *Sensitivity to the sun*

The skin can be sensitive to the sun for a variety of reasons: underdeveloped (childhood), inflamed (atopic dermatitis or acne), photosensitivity induced by drugs or dermatological treatments. In these cases it is vital to use protection with a sun protection factor (SPF) suitable for each type of skin.

Sensitivity to the harmful effects of ultraviolet radiation is an inheritable aspect. Numerous largescale studies have identified genetic variations that enhance sensitivity to the sun and the tendency we have to suffer from sunburn (erythema).

The genes related to skin pigmentation (ASIP, TYR, MC1R, and OCA2) and a low tanning ability are the ones that most influence the sensitivity of our skin to the sun. In addition, there is a strong association between DNA repair genes and the tendency to suffer from sunburn. These genes have no relation to the ease of tanning, so there is an underlying mechanism to burns that is independent of pigmentation.

Genes analyzed: NTM, TYR, ASIP, LOC10537.



Your susceptibility to sun-sensitive skin is intermediate.

## Ease of tanning

Tan is the physiological response stimulated by ultraviolet (UV) radiation from the sun's rays. Exposure to UV rays increases the production of eumelanin, a type of melanin pigment that darkens the skin to protect it from damage. The ease of tanning varies between individuals and can have positive and negative effects on the health of the skin.

People with greater difficulty are more prone to burns and sun spots, wrinkles, folate loss and melanoma, while people who tan easily have a risk of vitamin D deficiency because they can produce less vitamin D in response to solar exposition.

The tanning ability of the skin is variable and is genetically determined. People with certain variants in genes related to pigmentation usually have clear eye color, clear skin and less tanning ability. Variations in the MC1R gene (melanin receptor) are the most determinant and are associated with red hair, freckles, increased sensitivity to the sun and less tan.

Genes analyzed: LOC10537, HERC2, ASIP.



You have a high probability of tanning easily.

## Sunspots

Facial sun spots (sun lentigos) are oval or round pigmented spots that measure 2 to 20 mm, brown, uniform and located in areas frequently exposed to the sun as face, arms or back of the hands. They are larger than freckles, do not disappear in winter and are common in aged skin.

Solar lentigines are the result of local growth of melanin-producing cells in response to ultraviolet radiation. These spots are more frequent among the Caucasian and Asian population and in women, especially after 50 years. Although they are benign lesions that do not need medical treatment, they indicate that the sun exposure has been excessive. For esthetic reasons can be eliminated by different treatments, although the best form of prevention is the use of sunscreens and control the sun exposure.

Variations in MC1R and IRF4 genes have been associated with an increased risk of sunspots. There are numerous risk alleles in the MC1R (melanin receptor) gene.

Genes analyzed: IRF4, MC1R.



Your predisposition to sunspots is very low.

## Photo-ageing

Photo-ageing is defined as the premature ageing of the skin due to sun exposure. It is one of the harmful effects of prolonged and daily exposure to UV radiation, which causes DNA damage, oxidative stress and alterations in the normal architecture of the connective tissue of the skin, impairing its function.

Most premature ageing is caused by exposure to the sun. Photo-ageing is responsible for uneven pigmentation, fine wrinkles, sagging skin, freckles, senile spots, spider veins on the face and rough skin. It is therefore crucial to protect the face and body against the negative effects of UVA and UVB rays.

Numerous studies suggest that photo-ageing has a genetic basis. Variations in the genes *STXBP5L* and *FBXO40* have been associated with an overall photo-ageing score that combines factors such as irregularities in pigmentation, wrinkles and sagging skin.

Genes analyzed: *FBXO40*, *STXBP5L*.



Your genotype indicates an increased risk of severe photo-ageing. Intake of extra antioxidants is a fundamental tool in the prevention of ageing. Creams with arbutin, kojic acid, L-ascorbic acid, licorice extract, retinol or vitamin B<sub>3</sub> can help you restraint the signs of premature photo-ageing.

## NOURISH YOUR SKIN

### Vitamin B<sub>9</sub> deficiency

Folate or folic acid (vitamin B<sub>9</sub>) works in conjunction with vitamins B<sub>6</sub> and B<sub>12</sub> in DNA synthesis and amino acid metabolism. Folate deficiency can increase the risk of skin damage such as psoriasis, venous thrombosis, oral atrophy, and dermal ageing.

Supplementation with L-5-MTHF, the bioactive form of folic acid, is beneficial for people with these disorders. Elevated levels of homocysteine, a marker of folate deficiency, cause ageing of the skin by degradation of collagen, fibrillin, and elastin. L-5-MTHF helps to improve the firmness of the skin and also reduces the signs of ageing. The recommended daily allowance for adults is 400 µg (600 µg for pregnant women).

Several genetic variants in the MTHFR gene are associated with low plasma folate levels. In addition, these variants have also been associated with varicose veins.

Genes analyzed: MTRR, MTHFR.



You have a high risk of high levels of homocysteine and low levels of vitamin B<sub>9</sub>. You take supplements containing L-5-MTHF, the active form of vitamin B<sub>9</sub> that can be used directly by the body. This helps to have a firmer skin since it improves the metabolism of the collagen.

## Vitamin B12 deficiency

Vitamin B12 (cobalamin) plays an important role in neurological function, it is essential for the formation of blood cells and for cellular DNA synthesis. Vitamin B12 and folic acid help lower homocysteine levels.

Elevated blood levels of homocysteine have been associated with cardiovascular diseases, psychiatric and skin disorders such as oral atrophy and hyperpigmentation. The recommended daily allowance for adults is 2.4 mg.

Older people, vegetarians and vegans are at risk of B12 deficiency.

A genetic variant in the FUT2 gene has been associated with low levels of vitamin B12 in the blood.

Genes analyzed: FUT2.



According to your genetics you are at risk of vitamin B12 deficiency. Supplement your diet with methylcobalamin, which is a highly bioavailable form of vitamin B12 that can directly be used by your body. It was shown to be effective against eczema and atopic dermatitis.

## Vitamin C deficiency

Vitamin C (ascorbic acid) must be obtained from the diet because humans cannot synthesize it. The dermal affections associated with vitamin C deficiency are: abnormal thickening of the outer layer of the skin, bruising easily, inflammation, deficiency in wound healing, dry and rough skin and hair loss.

The recommended daily amount of this vitamin for adults is 75-90 mg. The topical application of vitamin C is widely used to improve the signs of photo-ageing, including wrinkles and sagging skin. Vitamin C also promotes skin hydration and collagen production.

Many studies have reported that a genetic variant in the *SLC23A1* gene is associated with reduced levels of vitamin C in the blood.

Genes analyzed: *SLC23A1*.



You present the genotype associated with normal levels of vitamin C.

## Vitamin D deficiency

Vitamin D is produced on the skin following exposure to ultraviolet light B (UVB rays). Excessive exposure to UV radiation accelerates skin ageing, while vitamin D deficiency is associated with several skin diseases such as psoriasis, atopic dermatitis, vitiligo and ichthyosis. Enough vitamin D in the skin helps to minimize acne, increase skin elasticity and immunity, stimulate collagen production, improve brightness and decrease expression lines and dark spots.

The recommended daily allowance for adults is 15 µg (600 IU); however, the American Academy of Dermatology recommends 25 µg (1000 IU) for people who are at increased risk for deficiency.

People with dark skin, limited sun exposure, and those who use photoprotectors that block sunlight are at increased risk. Numerous studies have identified genetic variations in various genes that contribute to vitamin D deficiency.

Genes analyzed: GC, CYP2R1, VDR.



You are predisposed to have lower levels of vitamin D but the binding and transport of this vitamin are normal, so we recommend that you increase the consumption of foods rich in vitamin D (blue fish and fish liver oil) to reach some levels optimal.

## Vitamin E deficiency

Vitamin E refers to a group of eight antioxidant molecules, of which  $\alpha$ -tocopherol is the most abundant in the body. Vitamin E strengthens the immune system and protects the skin from ultraviolet radiation and inflammation. Vitamin E deficiency can cause dermal ulcers and increase collagen loss.

The recommended daily allowance of vitamin E for adults is 15 mg. Many studies have shown that when vitamin E and vitamin C are taken together as an oral supplement, they reduce inflammation of the skin produced by UV radiation and decrease the skin's susceptibility to sunburn.

A genetic variant near the APOA5 gene has been associated with increased levels of plasma  $\alpha$ -tocopherol (reduced risk of vitamin E deficiency).

Genes analyzed: intergenic.



Your genotype is not associated with increased levels of  $\alpha$ -tocopherol. Therefore, it is recommended to increase consumption of foods rich in vitamin E.

## Omega 3 and Omega 6 deficiency

Omega-3 and omega-6 fatty acids are important polyunsaturated fatty acids for the heart, brain, anti-inflammatory response and ageing. Omega-3s (EPA and DHA) and omega-6 (AA) are essential fatty acids that must be obtained through diet. Deficiencies in these fatty acids can lead to various skin problems like dermatitis, acne, peeling, dry skin and psoriasis.

These disorders can be alleviated with omega fatty acid supplementation. Omega-3s protect against dermal damage induced by UV radiation and reduce inflammation.

In general, the diet contains enough omega-6 but insufficient omega-3, so an additional intake of omega-3 might be beneficial. A genetic variant of the *FADS1* gene has been associated with low levels of omega-3 (EPA) and omega-6 (AA).

Genes analyzed: *FADS1*



You present a genotype associated with a lower processing of essential fatty acids. Therefore, you could have diminished levels omega-3 in blood. It is recommended to increase the intake of foods rich in omega-3 or take it as food supplement.

## *RECOMMENDATIONS*

### **Skin care products:**

- Organic skin creams, preferably with anti-inflammatory properties such as omega 3.
- Products that contain carnosine, niacinamide, green tea or  $\alpha$ -lipoic acid to reduce the effects of glycation.
- Ascorbic acid, retinol or licorice extract to restrain photo-ageing.
- Use non-greasy make-up.

### **Food supplements:**

- Extra supplements of antioxidants are a must to combat free radicals and reduce signs of photo-ageing.
- Food supplements that contain L-5-MTHF (Methylfolate) and Methylcobalamin, which are the biologically active forms of vitamins B9 and B12 and are readily available for the body (instead of the usual folic acid and cyanocobalamin).

### **Diet:**

- Include lots of sources of vitamin D, vitamin E and omega-3 fatty acids, like blue fish, fish- oil, green vegetables, nuts and seeds.

**Any changes you want to make to your diet or skin treatment should be discussed with a health professional.**