

Please note that this is a sample report and **not a complete report** of the test

NUTRIFIT

Premium

Nutrigenetic analysis

Test Subject

ID: 00002



Dear Mr Subject,

we congratulate you on an important step that you have made towards self-discovery. The better you know yourself, the easier you influence your body weight, youthful look, your fitness and health. As the genes are the ones that determine the response of your metabolism and muscles, your personal DNA analysis will allow you to optimise eating habits and exercise routine in order to reach your goals much more easily. We believe that with carefully prepared, personalised recommendations, our experts will justify the trust that you have invested in us.

We are happy to be able to follow you on this exciting journey where you will, with the help of your personal DNA analysis, finally discover how your body functions. The secret to success that your personal DNA analysis will lead you to is hidden in the personalised diet and lifestyle plan, in which all the needs that your genes determine are taken into consideration.

The analysis of your genes is performed according to the highest quality standards. In the first stage, on the basis of relevant scientific literature, we submit the genes to the rigorous selection where, among many, we chose only those for which the influence has been proven, and for which there are enough reliable evidence and quality scientific research. We perform the analysis in a laboratory, which operates according to the ISO's quality standards, where we analyse your DNA using an extremely reliable and most advanced technology. In addition, nutritional experts create expert nutritional and lifestyle recommendations, especially for your genetic makeup.

It is precisely our high-quality standards that guarantee reliable results of DNA analysis. Or, as the head of the Chair of Pharmaceutical Biology, prof. Borut Štrukelj, M. Pharm., Ph.D., says:

"The personal DNA analysis reveals surprising information which has not been known to us so far. It enables the individual to start eating and training according to his/her genetic makeup. He/she, therefore, ingest only what his/her body needs, and go for training regime, which, according to his/her genetic makeup, suits him/her the most."

prof. Borut Štrukelj, M. Pharm., Ph.D., The Faculty of Pharmacy, University of Ljubljana

We are convinced that your personal DNA analysis will lead you to appropriate eating habits, a healthier lifestyle, a better well-being and, consequently, a better personal appearance. We would like you to know that your personal DNA analysis does not contain any pathological diagnoses, and we recommend that you consult your personal doctor, in case of any bigger changes to your eating habits.

You yourself are the key to the final success of your DNA analysis, and we, therefore, advise you to follow the recommendations and practise them responsibly. You are about to discover surprising information about yourself that will help you make the best of the potential that Mother Nature has given you.



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SAMPLE REPORT

THE INFLUENCE OF DIET ON BODY WEIGHT

Analysis	Your result	Summary
Weight loss-regain	● MORE LIKELY TO REGAIN WEIGHT	<i>If you would like to lose some weight, it is not recommended to starve yourself! Rather develop healthy eating habits which you will be able to follow even after you reach your desired weight.</i>
Risk for being overweighted	● LOWER RISK	<i>Your risk is 32% lower than average, which still doesn't mean that you can't put on weight. We advise you to follow detailed report of the analyses.</i>
Response to saturated fats	● NORMAL	<i>The intake of saturated fats is not additionally unfavourable for you. Despite that, your daily intake should not exceed 10% of caloric intake.</i>
Response to monounsaturated fats	● NORMAL	<i>Your daily intake of monounsaturated fats should be 10% of caloric intake. We recommend you to prefer olive oil when preparing the food.</i>
Response to polyunsaturated fats	● NORMAL	<i>Polyunsaturated fats should represent 7% of your daily caloric intake. You will find sufficient amounts of them in hazelnuts, almonds, mackerels, etc.</i>
Response to carbohydrates	● UNFAVOURABLE	<i>Due to your unfavourable response to carbohydrates, we recommend you to lower their daily intake. Restrict it to 50% of daily caloric intake.</i>

LOW CARB DIET

You are advised to eat foods from all food groups, with controlled intake of carbohydrates.

THE REQUIREMENT OF NUTRIENTS

Analysis	Your result	Summary
Vitamin B6	● LOW LEVEL	<i>Eat foods that contain more vitamin B6 (figs, apricots, chicken), to make sure that your daily consumption of vitamin B6 would be 2300 mcg.</i>
Vitamin B9	● LOWER LEVEL	<i>For you the daily vitamin B9 intake is 500 mcg. We recommend to you fruits (oranges, dried apricots) and vegetables (leek, broad beans, broccoli).</i>
Vitamin B12	● HIGH LEVEL	<i>Consume 3 mcg of vitamin B12 daily. Include in your menu milk and milk products and occasionally also meat.</i>

THE REQUIREMENT OF NUTRIENTS

Analysis	Your result	Summary
Vitamin D	● AVERAGE LEVEL	For consuming 25 mcg of vitamin D daily, we advise you to consume fish (sardines, mackerel) and dairy products.
Iron	● LOWER LEVEL	We recommend to you seeds (pumpkin, sesame), pistachios, cashews and rice bran, that will take care of the daily intake of 15 mg of iron.
Sodium (salt)	● AVERAGE SENSITIVITY	Eat food, that is poor in sodium – consume less than 1200 mg of sodium daily. To improve the taste of food, use lemon, garlic or mint.
Potassium	● LOWER LEVEL	We recommend 4000 mg of potassium daily. Fruits (apricots, blueberries), vegetables (leeks, wheat germ), and pistachios are the best sources.
Bone Density	● AVERAGE DENSITY	You can improve your state with regular physical activity and with foods that contain more vitamin C (broccoli, cabbage, black currants).
Zinc	● AVERAGE LEVEL	We advise you to consume not less than [table=Cink_povprečen] mg of zinc daily. Some vegetables are high in zinc, however, phytates in vegetables can have an inhibitory effect. That can be minimised by soaking.

EATING HABITS

Analysis	Your result	Summary
Sweet treats intake	● LOWER TENDENCY	If you, despite favourable genes, will get an urge to have something sweet, instead of unhealthy snacks, pick rice waffles coated with yogurt.
Satiety and hunger	● HIGHER TENDENCY FOR INSATIABILITY	Insatiability can be effectively decreased with the pre-meal glass of water. Water is reducing the space available for food.
Perception of sweet taste	● LESS INTENSIVE	We advise you to give up sweetening out of habit. Your taste receptors will get adapted and will slightly sharpen the perception.
Perception of bitter taste	● MORE INTENSIVE	You perceive bitter taste more intensively. You can alleviate unpleasant taste of broccoli, radish and spinach by preparing them as soups and sauces.

METABOLIC PROPERTIES

Analysis	Your result	Summary
Alcohol metabolism	● LESS EFFECTIVE METABOLISM	Stay moderate with your alcohol consumption. We advise you to dilute alcoholic drinks with water, sparkling water or juice.
Caffeine metabolism	● RAPID METABOLISM	You are fast caffeine metabolizer, therefore it has little bit less impact on you. Despite that, we do not advise you to drink more than 2 cups of coffee per day.
Lactose intolerance	● EFFECTIVE METABOLISM	You have an effective lactose metabolism. Consumption of milk and milk products is recommended to you in terms of metabolism of lactose.
Gluten intolerance	● LOW LIKELIHOOD	Gluten most likely does not impact your metabolism. Your diet should remain as diverse as possible. If experiencing any problems associated with gluten intolerance, try a gluten-free diet.

DETOXIFICATION OF YOUR BODY

Analysis	Your result	Summary
Oxidative Stress	● LOWER EXPOSURE	Despite your favourable genes, we discourage you from smoking or drinking, as these activities will expose you to free radicals and oxidative stress.
Vitamin E	● AVERAGE LEVEL	Your daily vitamin E intake should be 14 mg. Lot of vitamin E can be found in wheat germ and its oils, almonds, hazelnuts, tomatoes and broad beans.
Selenium	● HIGHER LEVEL	Your daily selenium intake should be 40 mcg. Maintain a healthy weight, because with increasing BMI, daily needs for selenium may increase.
Vitamin C	● HIGH LEVEL	Your daily vitamin C intake should be around 100 mg. We advise you to include turnips, cabbage, peas, and potatoes in your diet.

SPORTS AND RECREATION

Analysis	Your result	Summary
Muscle structure	● GREATER ENDURANCE	<i>You have durable muscles. We recommend disciplines, such as long distance running, cycling, aerobics, skating, swimming or hiking.</i>
Strength training	● LESS RECOMMENDED	<i>To built up some muscles without accumulating extra fat we don't recommend heavy weight lifting. Go for workouts, focused on your own weight: e.g. push-ups, sit ups, lifting yourself on a bar.</i>
Soft tissue injury risk	● HIGHER SOFT TISSUE INJURY RISK	<i>You are more prone to soft tissue injuries, so you should warm up thoroughly before exercise and stop the training gradually.</i>
VO ₂ max	● HIGHER AEROBIC POTENTIAL	<i>Due to your favorable result it's expected that compared to people with low aerobic predisposition you have to work less for the same results.</i>
Post exercise recovery	● FAST RECOVERY AFTER TRAINING	<i>You are not a carrier of genetic variants which could affect your ability to recover after training.</i>
Heart capacity	● AVERAGE HEART CAPACITY POTENTIAL	<i>To increase your heart capacity, try to perform very hard exercise for 3-5 minutes, separated by complete recovery between each hard effort.</i>
Muscle volume gene	● LOW MUSCLE VOLUME POTENTIAL	<i>Your genetic makeup doesn't give you an advantage in terms of muscle volume gain potential compared to the individuals with one or two A copies of IL15RA present.</i>
Warrior gene	● IN BETWEEN WARRIOR AND WORRIER	<i>The analysis of specific variant within COMT gene has revealed that you are carrier of the "AG" genotype, which means you fall somewhere in between warrior and worrier type.</i>
Lean body mass	● HIGHER POTENTIAL	<i>For high lean body mass, make sure to consume enough proteins and stay hydrated. Good sources of proteins include eggs, low-fat dairy, lean steak, white-meat poultry and fish.</i>
Gene for fatigue	● FASTER LACTATE REMOVAL	<i>Even if your genetic predispositions are associated with a lower degree of fatigue, performing an active cool-down after workout will help clear lactate more quickly than simply resting.</i>

ANALYSIS OVERVIEW OF YOUR RESULTS

LIFESTYLE

Analysis	Your result	Summary
Nicotine addiction	● LOWER RISK FOR ADDICTION	<i>Cigarette smoke is a cause of many health problems, so despite what your genetic results we discourage you from smoking.</i>
Alcohol addiction	● AVERAGE RISK FOR ADDICTION	<i>You have higher risk for alcohol addiction, compared to people with most favourable genetic makeup, so you should limit your alcohol consumption.</i>
Biological ageing	● SLOWER AGEING	<i>You age slower compared to others. Be careful with unhealthy bad habits (smoking, alcohol, overeating) so you wouldn't worsen your state.</i>
Inflammation sensitivity	● LOWER SENSITIVITY	<i>To ensure a lower level of inflammation, include antioxidants and other anti-inflammatory foods in your diet. For example, dark green vegetables, dark chocolate, garlic, walnuts, ginger or salmon.</i>
Sleep cycle	● INTERMEDIATE TYPE	<i>Intermediate-type people reach peak performance 6.3 hours after waking. At this time, you should perform the most difficult mental or physical activities.</i>

CARDIOVASCULAR HEALTH

Analysis	Your result	Summary
HDL (good cholesterol)	● AVERAGE LEVEL	<i>Your genes determine an average HDL cholesterol level, meaning that your condition can be improved. Try to be physically active every day.</i>
LDL (bad cholesterol)	● AVERAGE LEVEL	<i>Your genes determine an average level of LDL cholesterol. Great measure is to limit intake of trans fats (margarine, mayonnaise, fried foods, etc.).</i>
Triglycerides	● HIGH LEVEL	<i>Your genes determine 27% higher than average level of triglycerides. You are advised to follow the detailed recommendations, located in the analysis.</i>
Blood sugar	● AVERAGE LEVEL	<i>Limiting intake of foods sweetened with added sugar (coffee, donuts, cookies), can have big influence on lowering blood sugar level.</i>
Omega-3 metabolism	● SLIGHTLY INCREASED RISK OF DEFICIENCY	<i>We recommend that you include salmon, tuna or sardines, which are high in EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) types of omega-3 fatty acids.</i>

CARDIOVASCULAR HEALTH

Analysis	Your result	Summary
Omega-3 and triglycerides	● MORE EFFICIENT	Your genes determine that a diet rich in omega-3 fatty acids may be a very efficient strategy in lowering your triglycerides. In case of high triglycerides, think about including more omega-3 in your diet.
Insulin sensitivity	● AVERAGE SENSITIVITY	Include foods rich in fibre - especially those with soluble fibre, such as legumes, oatmeal, flaxseeds, brussels sprouts and oranges.
Adiponectin	● AVERAGE LEVEL	Your genes determine average production of adiponectin. Adiponectin level also depends on body weight, therefore keeping BMI under 25 units should be one of the most important long-term goals.
C-reactive protein CRP	● AVERAGE CRP LEVEL	To keep your CRP level low we recommend you to opt for low glycaemic index food. This helps to reduce blood insulin and sugar which may provoke inflammations and is beneficial for overall health.

SKIN REJUVENATION

Analysis	Your result	Summary
Skin antioxidant capacity	● SLIGHTLY LESS EFFICIENT	Vitamins C and E, CoQ10, resveratrol, green tea, coffee berry polyphenols have all shown efficiency as antioxidants and free radical scavengers for skin protection.
Glycation protection	● LESS EFFICIENT	Try to limit your intake of food products that are high in white sugar and fructose corn syrup. These are popular ingredients in soda, fruit-flavoured drinks, packaged bread and crackers.
Cellulite	● INCREASED RISK	Regular physical activity, low sugar intake, sufficient water drinking are all good measures which can help to prevent the development of cellulite and reduce its appearance.
Skin hydration	● DECREASED	Use moisturizers and night creams regularly. They should include ingredients in one of three different classes to help promote skin hydration: humectant, emollients and occlusive.
Skin elasticity	● HIGHER RISK	Avoid tannings boots as they damage the skin with intense UVA light. Also include foods rich in vitamin A like sweet potatoes, carrots, spinach and beef livers.
Stretch marks	● INCREASED RISK	The most you can do to prevent stretch marks is to maintain a healthy weight. Rapid weight gain is one of the major causes of the formation of stretch marks.

INSTRUCTIONS FOR READING YOUR PERSONAL DNA ANALYSIS

For a better understanding of your personal DNA analysis, we would like you to read the following instructions.

Index and an overview of analyses with your advice

A user-friendly index enables you an easy and fast review of all the analyses. In addition, the index itself already contains the results of the analyses, which show the features (nutrients, lifestyle factors) that you have to pay attention to, based on your genes.

The Index is followed by “Analysis overview of your results”, which features the most important findings and key recommendations for each section separately. A comprehensive summary of recommendations enables you to quickly and easily focus only on the factors that are the most important for you.

Sections and analyses

Your personal DNA analysis thematically capture the key elements of your diet and lifestyle. Every section starts with a summary of results, which is followed by an introduction to the subject of analyses for enabling us an easy interpretation of results.

An individual analysis contains an explanation of scientific research and the analysed genes with the mutations within these genes. Every analysis contains a genetic result and appropriate nutritional and lifestyle recommendations. More detailed explanations of larger analyses can be found at the end of your personal DNA analysis, in the chapter “More about analyses”.

1. SECTION THE INFLUENCE OF DIET ON BODY WEIGHT

2. SECTION THE REQUIREMENT OF NUTRIENTS

3. SECTION EATING HABITS

4. SECTION METABOLIC PROPERTIES

5. SECTION DETOXIFICATION OF YOUR BODY

6. SECTION SPORTS & RECREATION

7. SECTION LIFESTYLE

8. SECTION CARDIOVASCULAR HEALTH

9. SECTION SKIN REJUVENTION

Results of your personal DNA analysis

For a better understanding, your results are presented in a colour scheme, where each colour has a specific meaning:



- **Dark green** | Your result is the most optimal; the state simply needs to be maintained.
- **Light green** | Your result is not completely optimal; the state can be improved.
- **Yellow** | Your result is not favourable. For an optimal state, we recommend action.
- **Orange** | Your result is not favourable. For an optimal state we recommend action.
- **Red** | Your result is the least favourable; pay close attention to these analyses.
- **Grey** | Your result is neutral - it defines neither a positive nor a negative status.

WAY TO YOUR IDEAL BODY WEIGHT

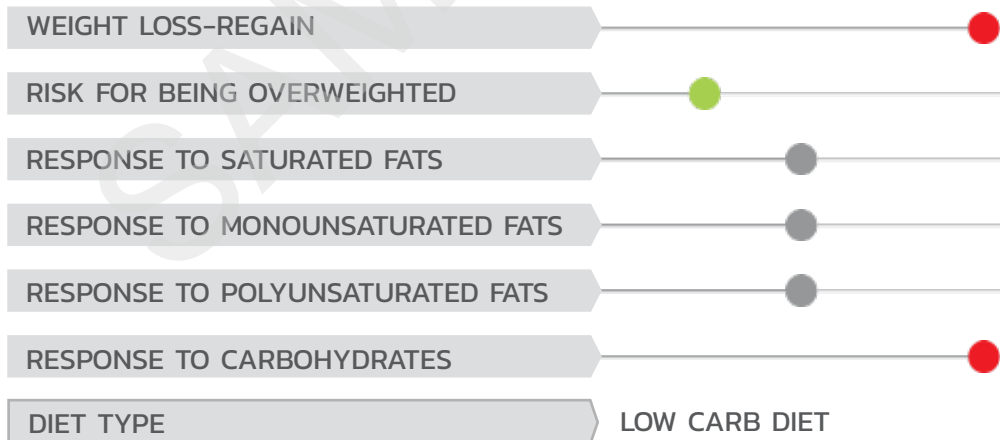
ADJUST YOUR DIET ACCORDING TO YOUR GENES

Our health is directly related to our diet and eating habits. On one hand, there is a characteristic excessive calorie intake which results in weight-gain, and on the other, there is unhealthy dieting with crash diets which do not have the right effect.

In this chapter, you will learn how your genetic makeup influences the development of overweight, the feeling of insatiety, weight loss-regain and how your body responds to different types of fats and carbohydrates. At the end of the chapter, we reveal "A diet type" that according to your genetic makeup suits you the best.

We advise you to follow our recommendations because the balance between the intake and the use of calories, physical activity and genetic background is the key to optimal body weight and well-being. It is generally not recommended to eat more calories than are actually burned. In addition to a controlled calorie intake, the right choice of foods is also crucial, as certain foods can cause even more harm, while other foods can improve your condition.

The fact, that a diet based on genetic analysis is truly effective, has been proven by scientific research performed at Stanford University. The study discovered that people who had been eating according to their genetic makeup had lost 4 kilograms more than those who had been trying to lose weight in no accordance with their genetics.



RESPONSE TO SATURATED FATS

Saturated fats are found mostly in the food of animal origin. Our body uses them as a source of energy, but, unfortunately, in connection to the genetic makeup, they also have the property of increasing the risk of becoming overweight. Scientists have discovered from a 20-year long study, a gene that causes some people gain weight quicker due to saturated fats than others. They discovered that the saturated fats have an even more negative effect on people with an unfavourable variant of gene APOA2. In case of excessive consumption of saturated fats, they have a twice as high risk for becoming overweight, compared to carriers of the common variant of the gene. Despite this fact, people with a risk variant of **gene APOA2** do not need to worry: by reducing the saturated fat intake, they can lower their BMI by 4kg/m². Such differences have occurred between people with an unfavourable variant of the gene who have consumed normal amounts of saturated fats and those who have appropriately limited their intake.



YOUR RESULT:

NORMAL RESPONSE

One of your chromosomes carries a common copy of the gene APOA2 and the other, a rare copy of the gene. Saturated fats, therefore, do not have a negative influence on you. Approximately 48 percent of people in the population have such a genetic makeup, as you have.

Recommendations:

- Your genetic makeup determines that saturated fats are not additionally unfavourable for you.
- Your daily intake of saturated fats can be slightly higher than for people with an unfavourable variant of the gene; therefore you will follow your daily intake recommendations more easily.
- We recommend that you closely follow your diet recommendations at the end of the chapter, which take into account your response to saturated fats.
- When planning your menu, we suggest you to use the nutrition charts, to make following our recommendations easier.

WHY WE NEED THEM

source of energy for the body

CAN OUR BODY PRODUCE THEM

yes

THEIR INFLUENCE

increase LDL, slightly increase HDL

THEIR ADVANTAGE

more suitable for preparation of hot meals – do not form trans fats

WHERE ARE THEY FOUND

animal meat, milk and dairy products, coconut and palm oil

Saturated fats affect the transport of calcium, therefore it is not surprising that they are present in maternal milk. They are extremely important for our body, but the problem is their large representation in products of animal origin that can quickly lead to their excess amount.

RESPONSE TO MONOUNSATURATED FATS

Monounsaturated fats, just like saturated fats, are non-essential – they are not necessary for survival because our body knows how to produce them. However, they are very beneficial for our organism, because they visibly influence the increase of good HDL cholesterol, and simultaneously reduce the level of triglycerides and LDL, or weaken cholesterol. In addition, it has been proven that they reduce the risk of becoming overweight. Their increased consumption can, therefore, be very beneficial, especially, if we are the carriers of a certain variant of a gene. It has been discovered that people with a favourable variant of the **ADIPOQ gene** can efficiently reduce their body weight with a sufficient intake of these fats. The sufficient intake of monounsaturated fats has enabled the carriers of a favourable variant of the ADIPOQ gene an approximately 1.5kg/ m² lower BMI. Therefore, if you are the carrier of a favourable variant of the ADIPOQ gene, a slightly higher intake of monounsaturated fats, which will favourably influence your body weight, is recommended.



YOUR RESULT:

NORMAL RESPONSE

The analysis has shown that you are a carrier of a genetic makeup which determines a normal benefit of monounsaturated fats for your organism.

Recommendations:

- Although you respond normally to monounsaturated fats, this does not mean that they are not important for your health.
- Monounsaturated fats, together with polyunsaturated fats, reduce the levels of LDL cholesterol and triglycerides, and increase the level of HDL cholesterol. This is why foods with a higher amount of unsaturated fats are known as generally healthy.
- A great source of monounsaturated fats are olives, avocado, hazelnuts, macadamia nuts and cashews, which can be added to many dishes, or can be used for making delicious spreads.
- You can find detailed advice concerning the recommended daily intake of monounsaturated fats in your diet plan, so we recommend that you follow it.

WHY WE NEED THEM

source of energy, growth, development, functioning of the heart and nervous system

CAN OUR BODY PRODUCE THEM

yes

THEIR INFLUENCE

visibly reduce LDL and triglycerides and increase HDL

THEIR DISADVANTAGE

less suitable for preparing hot meals – form trans fats

WHERE ARE THEY FOUND

almonds, hazelnuts, walnuts, cashews, seeds, olive oil

Among monounsaturated fats, oleic acid (largely present in olive oil) is particularly beneficial for our health. Olive oil contains also many antioxidants and its use can protect you even against cardiovascular disease.

RESPONSE TO CARBOHYDRATES

Carbohydrates are the most basic source of energy needed for physical activity of our body. Because of their taste, we sometimes call them sugars. Various diets have a very different attitude towards them: some diets are based on carbohydrates, while other recommend limiting them. Yet other ones recommend that we consume them separate from proteins and fats. Of course, such diets are not successful with all people, because they do not consider your genetic makeup. We, however, have done precisely that.

We have analysed the **genes FTO and KCTD10**, which determine the influence carbohydrates will have on your body. It has been discovered that people with a risk variant of the FTO gene, in case they do not consume enough carbohydrates, are 3-times more susceptible to becoming overweight, compared to people who are carriers of two common variants of the FTO gene. With an adjusted intake of carbohydrates, they can considerably eliminate this risk. On the other hand, the gene KCTD10 determines the relationship between the intake of carbohydrates and the HDL cholesterol level and with an inappropriate intake and a risk variant of the mentioned gene, the HDL cholesterol level can rapidly decrease.



YOUR RESULT:

UNFAVOURABLE RESPONSE

Your DNA analysis has shown that you are the carrier of two unfavourable copies of the KCTD10 gene, which determines that your body has an unfavourable respond to carbohydrates.

Recommendations:

- Despite your unfavourable genetic makeup, there is no need to worry. It is only important that you limit your daily intake of carbohydrates.
- One of the effective ways to reduce your daily intake of carbohydrates is to prepare unseasoned boiled potatoes instead of whole grain rice – potatoes have fewer carbohydrates, which is surprising, but true.
- More detailed information concerning your optimal diet can be found at the end of the chapter, in your diet plan. In it you will also find all the information needed for preparing an optimal menu.
- For an easier and more effective preparation of menus we recommend a consistent use of nutrition charts.

WHY WE NEED THEM

source of energy, bone- and cartilage-building

DEPRIVATION

decrease of body and muscle mass, malnourishment, bad mood

WHERE CAN THEY BE FOUND

cereal products (bread, cereals, pasta), vegetables, fruit

Apples, oranges and apricots after a meal can be a reason for discomfort. They contain the substance pectin that bounds water and swells. With some people it can lead to feeling bloated or belching.

DIET TYPE

It is much easier to tell what is unhealthy in general for all of us than to answer the question about what type of diet is most suitable for an individual. The reason for this is the genetic makeup, which determines the suitability of a specific diet plan for our body. This is precisely why one diet can be very successful for one person but does not work for someone else, or it can even have a negative effect.

The diet that we recommend is not merely coincidental, but it is based on your genetic makeup. The diet based on your personal DNA analysis considers your individual characteristics and allows you to eat what your body truly needs.

YOUR RESULT:

LOW CARB DIET

We recommend you to choose diverse food from different food groups, but pay attention to control your carbohydrate intake. Be careful when you consume them, because an excessive intake has a negative effect on your health.

Your daily caloric intake, which is in accordance with your genetic profile, is presented in the chart below. Genes, namely, regulate the amount of energy that your body uses in resting, and this is why we were able to adapt our recommendations according to your genetic makeup. Do not forget to consider your daily physical activities, as the calorie consumption increases with physical activity, and it decreases on your less active days.

An optimal daily calorie intake:

Age	Exclusively sitting Activity with little activity in free time	An occasionally higher use of energy for walking and standing activities	Regular moderate physical activity	Intensive physical activity
	kcal/day	kcal/day	kcal/day	kcal/day
14 to 19	2236	2751	3267	3611
20 to 25	2187	2692	3197	3533
26 to 51	2042	2514	2985	3299
52 to 65	1867	2297	2728	3015
over 66	1766	2173	2581	2852

With the help of **genetic analysis**, we have also determined the percentage of daily calorie intake represented by saturated, monounsaturated and polyunsaturated fats, carbohydrates and proteins. The calories can be easily transformed into grams by using the following method:

- 1 gram of protein or carbohydrates is 4 kcal
- 1 gram of fat is 9 kcal

Example: 10 percent of monounsaturated fats in a daily intake of 2000 kcal is 200 kcal, which is approximately 22 grams (200/9) of monounsaturated fats.

THE INFLUENCE OF DIET ON BODY WEIGHT

Your recommended daily percentages of basic nutrients:

Nutrient	Your response	Daily intake (%)
Saturated fatty acids	NORMAL	10
Polyunsaturated fatty acids	NORMAL	7
Monounsaturated fatty acids	NORMAL	10
Carbohydrates	UNFAVOURABLE	48-50
Proteins		23-25

Recommendations:

MEAT AND FISH

You shouldn't opt for meat more than 4-times a week. Instead of beef and pork, try to opt for turkey meat more often, as it is healthier.

Choose lean parts of meat and meat products which are prepared out of whole chunks.

If you are vegetarian, you will successfully replace animal proteins with soy foods such as tofu or soy burgers.

Fish should be on your menu at least once a week. We recommend sea bass, sardines, mackerels or tuna.

MILK AND DAIRY PRODUCTS

Drink a glass of milk, or eat yoghurt every day. Yoghurt contains probiotic bacteria which regulate our digestion. Have a whole wheat bun with your yoghurt or add it to your favourite cereal.

Spread a spoonful of cottage cheese on a slice of bread or eat it with two slices of low-fat cheese.

Every now and then, prepare yourself milk rice or similar milk dishes (milk millet porridge, milk semolina).

OILS, NUTS AND SEEDS

When preparing food, do not exaggerate with oil. Add only a necessary amount of it. We recommend walnut oil, virgin olive oil or sunflower oil.

Every day, eat, for example, a large spoonful of ground flaxseeds and a spoonful of pumpkin seeds. You can sprinkle them over salads and pasta, or mix them with yoghurt.

From nuts and seeds we especially recommend sesame seeds and Brazilian nuts, which will enrich your dishes.

LEGUMES, VEGETABLES AND STARCHY FOODS

Your diet should consist mainly of complex carbohydrates. We recommend that you eat enough legumes and other vegetables. If possible, use them with every main course.

The most appropriate for you are peas, broad beans, chick peas, barley, leek, kohlrabi, cauliflower, mangold, lamb's lettuce, lentils and dandelion.

These foods contain fibres, which will lead to an early satiety feeling and you will, consequently, eat less carbohydrates.

Prepare them as salads or side dishes, but they can also represent your main course.

We also recommend porridge dishes made of spelt or barley. Mix one ladle of such porridge with mushrooms or cooked vegetables.

If your meal consists of rice, potatoes or pasta, do not eat bread with it. Also eat as little bread as possible with salads prepared out of legumes.

Other sources of carbohydrates should include unmilled rice, whole wheat or black bread, bran, kale, fennel, leek and mangold.

FRUITS

Throughout the day, eat at least two of the following fruit items: a handful of raspberries, blueberries, black currant, strawberries, a pear or an apple.

GENERAL RECOMMENDATIONS

Eat at least 5 meals a day: breakfast, morning snack, lunch, afternoon snack and dinner.

Opt for fresh and unprocessed foods. Pre-prepared food contains a lot of unhealthy additives.

Avoid frying. Stewing in own juice or boiling is definitely more recommendable.

In general, avoid adding sugar and instead of fruit yoghurt, opt of a regular one.

Instead of soft drinks and other sweetened beverages drink water, as it has no calories.

Replace white bread with whole wheat bread, and white pasta with dark pasta.

Try to avoid various sweet treats such as pastry, candies, ice-cream and artificial soft drinks, because they can quickly be in excess, and they also, in most cases, contain refined, white sugar.

If you find it hard to resist white bread and various bagels we have some advice for you: half the amount by, for example, slicing the bread so that the slice is thinner.



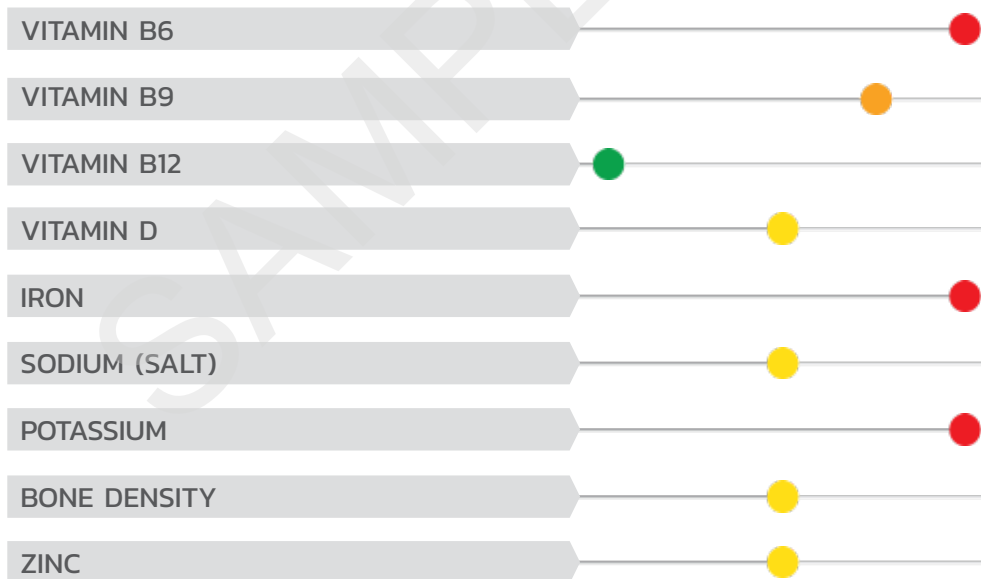
PERSONALIZED
NUTRIPLAN

WHICH VITAMINS AND MINERALS DOES YOUR BODY NEED?

MICRONUTRIENTS PLAY AN IMPORTANT PART IN YOUR HEALTH

Micronutrients, which include vitamins and minerals, are vital for our health. They are essential for the functioning of our organism; they improve our well-being and prevent many diseases. Their daily requirements are determined by numerous factors, and among them is also our genetic makeup. It determines which vitamins and minerals we have to consume in an increased amount or vice versa, and which of them we have insufficient amounts and we simply have to maintain their levels. We can get almost all of the vitamins and minerals with regular food. However, this can be slightly more difficult in case we are prone to the lack of them. In such cases, food supplements are a good option.

In this chapter, we will reveal to you what levels of vitamin B complex, vitamin D and E and also minerals, such as iron, zinc and potassium, are determined by your genes. In addition, you will also learn how sensitive you are to kitchen salt or sodium. The latter can be specifically adjusted with an appropriate intake of vitamins and minerals.



SODIUM (SALT)

Sodium is the main ingredient of kitchen salt, and it is also present in many other foods – predominantly those of animal origin. It is responsible for a normal functioning of the nervous system and the muscles, as well as for maintaining the osmotic pressure and the regulation of the amount of water in the body. Our body usually does not have problems with the lack of sodium, and food with less sodium is therefore considered the healthiest. It has been proven in many studies that an excessive intake of sodium (salt) is an important health risk factor. Sodium actually increases blood pressure, and this leads to other medical conditions. In the studies, where they attempted to gradually decrease salt intake, the systolic blood pressure (the pressure when the heart pushes the blood through arteries) in adult population dropped by 5 percent in average, which reduced the occurrence of stroke and cardiovascular disease by 24 percent and 18 percent, respectively. It is, therefore, recommended to limit salt intake. This is much more important for people whose blood pressure is even more sensitive to sodium or kitchen salt due to their genetic makeup.



YOUR RESULT:

AVERAGE SENSITIVITY

Your sensitivity to sodium is average; however, you are more sensitive compared to people with the most favourable genetic makeup.

Recommendations:

- We recommend low sodium foods, which means that you should try to limit your daily sodium intake to not more than 1200 mg.
- Pay attention to food labels: choose foods that do not have added salt.
- Instead of improving the taste of food with salt, use different herbs and spices. We recommend lemon, bay leaf, nutmeg, coriander, dill, garlic or mint.
- It is also important that you drink 2 litres of fluid daily. This way the excess salt will pass out of your body.
- Consider also the recommendations from the "Potassium" analysis, because its lack also influences the increase of blood pressure.

WHY WE NEED IT

normal functioning of the nerves and muscles, influence on the blood pressure, carbohydrate digestion

THE EFFECTS OF THE LACK

dehydration, disrupted digestion of carbohydrates, muscle cramps

WHERE IS IT FOUND

salt, mineral water, cheese, mussels, red beet, meat

Throughout history salt has had great importance, because it was more important than gold for survival. Salt was a privilege of kings and the upper strata of society. It was even used in prophecies and for foretelling destiny. Metaphorically it symbolizes devotion and loyalty, so even today in many places hospitality to the guests is shown by sharing bread and salt.

BONE DENSITY

By measuring **bone density**, we define the vitality of our bones. A decreased bone density is most typical for older people, but also younger people can encounter problems. We know two groups of factors which influence bone health. We have no influence on factors such as age, health condition, medications, health therapies and genetic design, but we can contribute to the health of our bones with regular physical activity and an appropriate diet. An appropriate diet and lifestyle are important already in the early age because they contribute to maintaining bone density later, at an older age.

To date, many genes that determine bone strength have been discovered, and an understanding of mechanisms with which these genes influence bone structure is improving. You can read more about the genes included in the analysis at the end of your personal DNA analysis in the chapter "Analysed genes".



YOUR RESULT:

AVERAGE BONE DENSITY

The analysis of genes responsible for bone strength has shown that you have favourable as well as unfavourable genes present, which determines an average bone density.

Recommendations:

- In addition to your genetic makeup, appropriate physical activity and an appropriate diet influence bone density, and we advise you to follow our recommendations.
- Calcium is most crucial for healthy bones, and we, therefore, recommend that you consume 1100 mg of calcium daily.
- Enough calcium can be found in chicken and turkey liver, dried figs, dandelion and sesame seeds. The latter contain almost 6-times more calcium than can be found in milk.
- Mineral water can also be a source of calcium. If you do not like milk, bear in mind that 1 litre of mineral water contains as much calcium as two glasses of milk.
- We recommend that you follow the instructions from the "Vitamin D" analysis, because vitamin D is crucial for the absorption of calcium from the intestines into the blood.
- We recommend that you eat broccoli, cabbage and black currant. Such foods contain a lot of vitamin C, which is important for collagen synthesis (organic part of bones).

AN UNFAVOURABLE INFLUENCE ON BONES

smoking, alcohol, excess weight, soft drinks

A FAVOURABLE INFLUENCE ON BONES

exercise, a healthy diet, sunbathing, calcium, magnesium, manganese, vitamin K

The most important method for measuring bone density is bone densitometry, which is performed on the basis of X-rays. Measurements are performed on the lumbar spine and on one of the hips, and on people under 50 also on the wrist. The examination is safe and simple, and it is conducted in only a few minutes.

ZINC

Zinc is an essential trace element and it is the second most common mineral in the body (after iron). It is vital for the functionality of **more than 300 enzymes**, for DNA stabilisation and gene expression. One of the main health benefits of zinc is enhanced immune function. As such, it is used for example in the treatment of the common cold as it can help relieve symptoms by reducing inflammation in the nasal cavity. Beyond this, zinc plays an important role in protein synthesis, body growth, blood clotting, insulin function, reproduction, vision, taste and smell. Zinc also aids in wound healing as it helps to stick skin and mucous membranes together.

Low levels of zinc may increase susceptibility to infections. Zinc deficiency is more common among older people as well as in vegetarians since red meat and other animal products are rich in zinc. Zinc is also present in some plants. However, the absorption of zinc from plant sources is less effective. In the scientific research on which our analysis is based it has been shown that genetics can influence a person's zinc blood levels. CA1, PPCDC and NBDY genes have all been shown to be significantly associated with a person's blood levels of zinc.



YOUR RESULT:

AVERAGE LEVEL OF ZINC

The DNA analysis has shown that you have favourable as well as unfavourable genetic variants present, which means you fall within the most common group of people with an average efficiency of zinc absorption.

Recommendations:

- Adequate levels of zinc help you to keep your immune system strong and can help protect you from infections.
- We recommend you consume not less than 11 mg of zinc on a daily basis.
- An 85 g serving of lamb contains around 6.7 mg of zinc and one cup of yogurt contains 1.6 mg of zinc.
- Meat, poultry, seafood and dairy products are among the best sources of zinc.
- Vegetables rich in zinc are especially kidney beans, chickpeas, cashews, sesame seeds and almonds.
- Bioavailability of zinc is lower in plant foods than animal foods because of phytates. The inhibitory effect of phytates can be minimised by soaking, heating, sprouting and fermenting. Absorption of zinc can be also improved by using yeast-based breads and sourdough bread, sprouts, and presoaked legumes.

WHY WE NEED IT

It is distributed throughout the brain, kidneys, muscles and eyes, and in men, the prostate gland. It is directly involved in cell division, helping to make new cells, keep the immune system active and keep enzymes working at their optimum.

THE EFFECTS OF THE LACK

reduced growth, skin lesions and reduced immune function

WHERE IS IT FOUND

ysters, beef, whole-grain wheat, legumes, pumpkin seeds, nuts, eggs and dairy foods

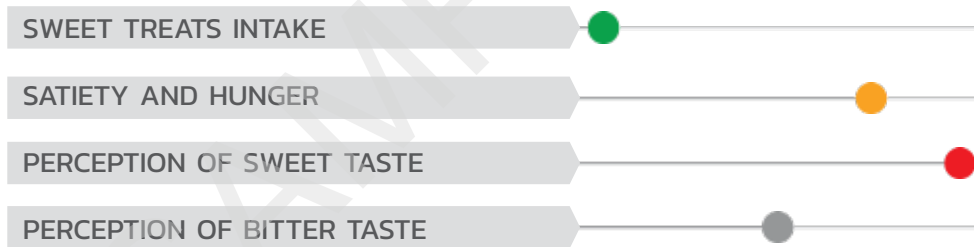
Premenstrual syndrome (PMS) affects from 8 to 15 percent of women during their childbearing years. Researchers have shown that a supplement of at least 15 mg zinc a day may lower the chances of PMS and at the same time decrease menstrual cramps during periods.

IMPORTANT INFLUENCES ON YOUR EATING HABITS

ALSO, UNHEALTHY EATING HABITS CAN BE INHERITED

Our health is directly related to our eating habits. Skipping meals, especially breakfast, eating too much candy, eating oversized meals and excessive sweetening of foods are common phenomena in today's society. On one hand, there is a characteristic excessive calorie intake which results in weight gain, and on the other, there is unhealthy dieting with crash diets which do not have the right effect.

Undoubtedly, our eating habits are also greatly influenced by the environment that we live in. It is full of stress and haste, and such an environment prevents us from developing healthy eating habits. However, eating habits are not merely the consequence of the environment, nor are they completely an individual's free choice. The truth of the matter is that, apart from the environment, it is also our genetic makeup that influences our eating habits.



PERCEPTION OF SWEET TASTE

Tasting is a process in which also smell and sight play an important role, but the main organ for tasting is actually the tongue. The tongue is covered with numerous taste buds which contain taste receptors. When they come in contact with a certain substance, a signal is transmitted to the brain, which then tells us what the taste of the substance is. Based on this we differentiate four basic tastes: sweet, salty, sour and bitter.

An important gene which determines the intensity of the perception of sweet taste is the **gene SLC2A2**. Scientists have discovered its role in a study that observed the relation of SLC2A2 gene variants to food type and, consequently, the sugar amounts that people consume.

It has turned out that people with an unfavourable variant of the SLC2A2 gene consume daily many more sugars than people with a favourable variant. The reason for this is a less intensive perception of sweet taste. As a result, the carriers of the unfavourable variant of the SLC2A2 gene tend to sweeten their food much more for the same effect.



YOUR RESULT:

LESS INTENSIVE

Analysis of your DNA has shown that you are the carrier of one rare and one common copy of SLC2A2 gene. For this reason your sweet taste perception is less intensive, which is, in this case, unfavourable. Approximately 25 percent of people have such a genetic makeup.

Recommendations:

- Because of a less intensive perception of sweet taste, a higher intake of sugar is typical for people with your genotype. You can successfully resist this by taking appropriate measures.
- We recommend that you use less sugar when baking pastry, although you might think that you should use more. The only reason for this is your perception.
- Give up sweetening out of habit. Initially, food will seem less tasty, but later your organism will partially adapt to this.
- Avoid sweetening coffee, tea, cocoa and lemonades. Bear in mind that, by sweetening them, you will, decrease the positive effects that these drinks have.

The only mammals that do not taste sweet are the family of cats. On their taste buds, cats do not have receptors to detect sweet taste. According to scientists, one of the only two genes that are required for the formation of the sweet receptor has become non-functional. Unlike dogs, cats, therefore, simply are not moved by candy.

PERCEPTION OF BITTER TASTE

A bitter taste is one of the four basic tastes that we differentiate. Its perception passes through taste receptors which communicate it to the brain that then tells us which taste is in question. However, the bitter taste perception is not equally effective in all people. The described mechanism can have flaws that are expressed in a less intensive perception of bitter taste.

Scientists have discovered that the **TAS2R38 gene** is responsible for the different susceptibility to bitter taste. Approximately 80 percent of people in the study, who were carriers of two common copies of TAS2R38 gene, did not detect a bitter taste. The ability to taste bitter has been determined by the ability to taste a special substance, called 6-N propylthiouracil (PROP). PROP is, normally, not found in nature, but the ability to taste this substance is closely connected to the ability to taste other related bitter substances, which can be found in broccoli, cabbage, coffee, tonic and some beers. Are you interested to find out what tastes these foods have for you?



YOUR RESULT:

MORE INTENSIVE

You are the carrier of one common and one rarer copy of the TAS2R38 gene, and you, therefore, perceive bitter taste more intensively.

Recommendations:

- Bitter substances, which you most likely can taste, can be found in kale, radicchio, olives, coffee, tonic and some beers.
- These substances play an important role in digestion, therefore do not leave them out of your meals just because of their bitter taste. However, if you truly find them very unpleasant, we recommend the following.
- We recommend the choice of spring vegetables, because of its less bitter taste.
- Sauté the vegetables you find bitter. You will reduce the content of substances which cause bitter taste, as the bitter substances are removed with the drained water.
- You can prepare the mentioned foods in a soup, with pasta or by adding your favourite spices, which will tone down the bitter taste.

In Favourable or unfavourable feelings to taste have evolutionary significance, since they enabled survival. Substances of very sweet taste evoke pleasurable sensations, as opposed to bitter substances, which discourage people from ingestion. This fact has allowed the separation of high-calorie food sources of potentially toxic substances such as certain alkaloids, which have a bitter taste.

THE EFFECTIVENESS OF YOUR METABOLISM

GENES HELP YOU LEARN ABOUT YOUR BODY'S METABOLISM

Our body, with the help of specific enzymes, processes or breaks down lactose, caffeine and alcohol after their consumption. This enables them to be used as nutrients or prevents these substances from becoming harmful. If a certain enzyme does not function optimally, an inappropriate adaptation can lead to certain health problems.

Lactose intolerance is one of the well-known phenomena, where lactase, an enzyme which is responsible for the breaking down of milk sugar lactose, is lacking. In case of lactose intolerance, our organism cannot break down milk sugar, and lactose intolerant people have many problems, such as diarrhoea, bloating and vomiting, when eating dairy products. Among important processes are also the metabolism of alcohol and caffeine. For both of them, a slow and ineffective metabolism is problematic. In this chapter, you will find out about your response to those substances and according to your genetic makeup, you will be given the most suitable recommendations.



CAFFEINE METABOLISM

Caffeine is a natural alkaloid, most commonly known as the main ingredient of coffee. It is metabolised in the liver by the enzyme, called CYP1A2. This enzyme is responsible for up to 95 percent of the entire caffeine metabolism, and it is, therefore, not surprising that a mutation in the **CYP1A2 gene** has an important influence on the enzyme activity and, consequently, the caffeine metabolism.

People with one or two mutated copies of the CYP1A2 gene metabolise caffeine more slowly, and as a result, feel a greater effect of coffee. But this is not as favourable as it may seem, because these people have a higher blood pressure after drinking coffee than those with a rapid caffeine metabolism. Researchers have proven in many studies that people with slower caffeine metabolism are more susceptible to medical conditions related to increased blood pressure. We, therefore, recommend them to adjust the daily dose of caffeine accordingly.



YOUR RESULT:

RAPID METABOLISM

The genetic analysis has shown that you are the carrier of two favourable copies of the CYP1A2 gene, and you, therefore metabolize caffeine rapidly. 52 percent of people have such a genetic makeup.

Recommendations:

- You are the carrier of a genotype that determines a rapid caffeine metabolism, which means that caffeine is quickly removed from your body.
- Because of your genotype, you are less susceptible to the risk for health complications related to increased blood pressure.
- Nevertheless, we recommend that you do not drink more than two cups of coffee a day.
- If you are an avid drinker of coffee, we recommend that you substitute it with a cup of black tea or a cup of decaffeinated coffee, which is even better.
- Caffeine is a diuretic, and, because of this, we recommend sufficient amounts of water which will help you replace lost fluid.



A creeping plant originating in the Amazon, guarana, contains a substance guaranine, which is almost identical to caffeine. Twice the amount of guaranine is present in guarana in comparison to caffeine in coffee beans. Guaranine is a caffeine alternative in some carbonated drinks and energy drinks.

GLUTEN INTOLERANCE

Gluten is a general name for the protein, which is best known for its presence in wheat, rye, barley, kamut, spelt and some others. It helps foods maintain their shape, acting as a glue that holds it together. This is why it's often added to processed and packaged foods. For instance, candy, sauces, snack foods and hot dogs are very likely to contain gluten. Generally, gluten is not bad for your body, unless you are gluten-intolerant. This means your body responds negatively to ingested gluten. There are various forms of gluten related reactions, but the most common ones are: celiac disease, wheat allergy and non-celiac gluten sensitivity. In these cases, a gluten-free diet is recommended, since the organism produces an immune response when breaking down gluten during digestion. The healthiest way is to seek out naturally gluten-free food groups. These include fruits, vegetables, meat, fish, seafood, dairy, beans, legumes and nuts. Also, buckwheat, millet and maize are gluten-free. Try to avoid highly processed foods.

The genes that we have analysed, are **DQA1** and **DQB1**, which tags for HLA-DQ2.5 and HLA-DQ8. Most of the gluten intolerant patients have variant present in both two genes. However, the presence of the variants itself doesn't mean that you are gluten-intolerant, since researches show genetic variants are also present in 30 percent of healthy people. But the percentage of gluten-intolerant patients with the presence of these variants is much higher. More than 95 percent of patients with celiac disease and 50 percent of patients with non-celiac gluten sensitivity have mutations present in both of these two genes. Other types of gluten related disorders, such as wheat allergy or dermatitis, are not linked to the analysed genes.



YOUR RESULT:

LOW LIKELIHOOD

Our analysis has shown that your genetic makeup determines lower likelihood for gluten intolerance.

Recommendations:

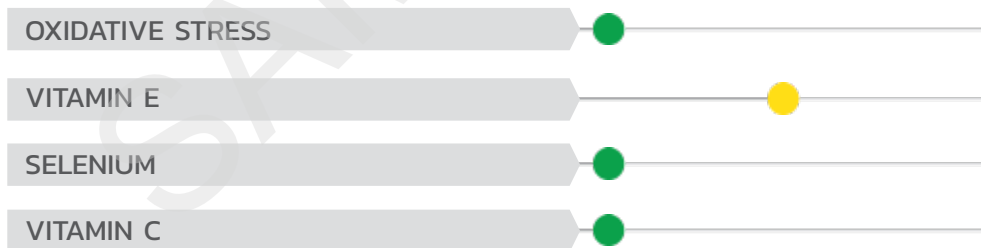
- Your genetic makeup determines that you most probably do not experience any problems when metabolising gluten.
- Based on your genetic result, there's no reason to omit eating food, which for instance contains wheat, rye, barley, kamut and spelt.
- We recommend you to eat as diversely as possible and not to try either omit or increase its intake.
- As already stated, only in 50 percent of people with non-celiac gluten sensitivity the genes that indicate gluten intolerance are found, so there is a chance that you are in the other half. If you experience problems such as gas, bloating, diarrhoea, constipation, and also fatigue, "brain fog" or feeling tired after consuming gluten, consider going on a gluten-free diet and consult with your doctor. Have in mind that gluten can be found in many food products, therefore you need to carefully read the declarations and you should not forget about the sufficient intake of fibers, vitamins and minerals.

Some promote gluten-free diet as a way to lose weight, or as a healthy diet for the general population. These claims are ungrounded. The gluten-free diet is healthier for people with gluten-related disorders, but there is no evidence that it is beneficial for people who do not have these conditions.

YOUR GENES, DETOXIFICATION AND ANTIOXIDANTS

GENES CAN ALSO INFLUENCE YOUR PHYSICAL APPEARANCE

In this chapter you will learn about your selenium and vitamin C and E levels that are determined by your genetic makeup, and how effective the detoxification mechanisms of your body are. Harmful substances enter into our body daily through food, water and air and we desperately need mechanisms that are responsible for detoxification and removal of these substances from our systems. These mechanisms include specific enzymes that detoxify our body, and antioxidants that neutralise free radicals. The formation of free radicals is caused by radiation, cigarette smoke, various pollutants and countless other substances which our body can successfully detoxify with the help of appropriate enzymes. However, a mutation can occur in the genetic makeup of the enzymes, which is then expressed as ineffective detoxification of the above mentioned potentially harmful and toxic substances. In case of an ineffective enzyme function or the lack of a certain enzyme, we are largely exposed to the toxins from the environment, and we have to adapt accordingly.



SELENIUM

Selenium is one of the very important minerals, because it functions as an antioxidant in your body. It forms an uncommon amino acid, selenocysteine that is needed for the functioning of over twenty enzymes. One of the best known of them is selenoprotein P that has antioxidative properties characteristic also of other selenoproteins. Numerous studies show that a high selenium level in our body has a direct anticarcinogenic and overall protective effect on our health.

It has been discovered in a scientific research that two polymorphisms are present in the **gene SEPP-1**, which is responsible for selenium transport, and they influence the selenium levels in our body. Scientists have additionally discovered that the selenium level is also determined by our BMI. An unfavourable combination of the genetic makeup and the BMI can influence lower selenium level for up to 24 mcg. In this case, an appropriate dietary adaptation is recommended.



YOUR RESULT:

HIGHER LEVEL

The genetic analysis has shown that you are the carrier of the variant of the SEPP-1 gene determining a higher selenium level in your body, which is favourable.

Recommendations:

- Despite favourable genetic makeup, be careful because your selenium needs are determined by your BMI.
- Considering the fact that you are the carrier of a favourable genetic makeup, and your BMI is below 30, we recommend you to consume more than 40 mcg of selenium daily.
- In case your BMI increases above 30, we recommend consuming twice as much of selenium per day.
- Selenium is present in many foods, and, therefore, with a diverse choice of foods, you will fulfil your daily requirements.
- We recommend eating diverse foods from the group of cereals, fish and meat, where selenium is most present.
- For a more detailed following of our recommendations we advise a continuous use of nutrition charts.

WHY WE NEED IT

an important antioxidant, immune system defence, detoxification

CONSEQUENCES OF ITS LACK

lack of energy, unhealthy skin, weakened immune system

WHERE IS IT FOUND

seafood, liver, cereal sprouts, bran, tuna, onion, broccoli, garlic, brown rice

A typical sign of people who consume excessive amounts of selenium is a characteristic smell of garlic, even if the person hasn't consumed any. By taking into account our recommendations this couldn't occur, as the person would need to consume 100-times more selenium than the recommended value.

VITAMIN C

Vitamin C, also known as ascorbic acid, is a water-soluble vitamin, found in different kinds of fruits and vegetables. Our body is not able to synthesise vitamin C, which means sufficient intake of vitamin C is very important for our health. Its primary function is boosting our immune system. It protects cells and keeps them healthy, prevents scurvy and helps with the healing of wounds. It is also important for collagen production, while it's also known to help with lowering hypertension.

Dietary vitamin C is transported in the human body by two transporter proteins, one of which is encoded by the **SLC23A1 gene**. A variant of this gene causes reduced absorption of vitamin C and is associated with a lower level of plasma vitamin C. The SLC23A1 gene was identified to be associated with circulating concentrations of L-ascorbic acid in the general population, which indicates that people with the mutation present should increase their intake of vitamin C.



YOUR RESULT:

HIGH LEVEL

You are a carrier of a favourable genetic makeup, which determines that you shouldn't experience problems related to vitamin C absorption.

Recommendations:

- Your genetic makeup protects you from a lack of vitamin C. To maintain this, we suggest you follow our recommendations and keep it on a similar level.
- We suggest you consume around 100 mg of vitamin C with food per day. Such an intake should maintain your vitamin C at a similar level.
- To maintain an appropriate level of vitamin C, we suggest you eat a moderate amount of vegetables such as turnips, cabbage, peas, Brussels sprouts and potatoes; and fruits, namely strawberries, pineapple, guava and apricots.
- To additionally diversify your diet and keep a healthy level of vitamin C you can introduce star fruit, litchis, kumquats, sun-dried tomatoes and saffron to your meal plan.

Did you know that, by storing fresh fruits, their vitamin C content drops? The level drops by 50 percent when stored in cold, and when stored under normal temperature, by spring the level has dropped to 2/3 of the after-harvest rate. Thus it is best to consume raw fruits and vegetables to ensure we consume more of this antioxidant.



WHY WE NEED IT

for producing skin, tendons, ligaments and blood vessels, healing wounds and forming scar tissue, repairing and maintaining cartilage, bones and teeth

CONSEQUENCES OF ITS LACK

scurvy, dry and splitting hair, gingivitis and bleeding gums, dry skin, decreased wound-healing rate, easy bruising, nosebleeds

WHERE IS IT FOUND

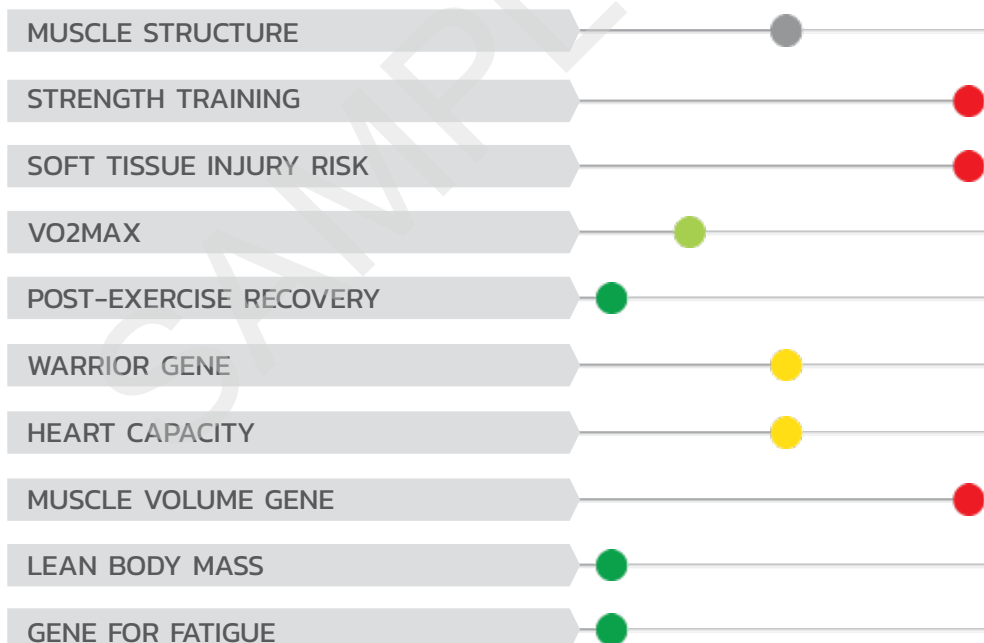
bell peppers, dark leafy greens, kiwi fruit, broccoli, berries, citrus fruits, tomatoes, peas, papaya

SPORTS AND RECREATION IN TUNE WITH YOUR GENES

DISCOVER THE WORKOUT MOST SUITABLE FOR YOU

In this chapter we will reveal to you the sports activities that you can be good at on the basis of your muscle structure. You will learn to what extent you are prone to soft tissue injuries. You will also learn about your aerobic potential and post exercise recovery. You will find out how beneficial a certain type of training is for you. Physical activity affects our health generally positively, but certain sports activities are more beneficial for some than they are for others.

As an example, scientists have discovered that a certain type of recreation can benefit some people, while the influence of it on others can be less optimal, or can even affect the accumulation of fatty tissue. All this strongly depends on our genetic makeup. For instance, genetics has a great influence over components of the athletic performance such as strength, power, endurance, muscle fibre size and composition, flexibility, neuromuscular coordination, temperament and other phenotypes. And this is precisely why we can, with the help of your DNA analysis, give you supportive recommendations, which help you on your way towards the desired goals.



VO₂max (YOUR AEROBIC POTENTIAL)

When increasing exercise intensity, our consumption of oxygen increases; but only to a certain point from which the oxygen consumption does not increase any more, even if we further increase the intensity. This is the **so called VO₂max point**. VO₂max therefore greatly influences our capacity to perform endurance exercise. VO₂max is the label for the maximum oxygen consumption of an individual and indicates the maximal volume of oxygen our body is able to use within one minute. It can be given as absolute value in liters per minute (l/min) or relative value in milliliters of oxygen per kilogram of body weight per minute (ml/(kg x min)).

VO₂max is partially determined **by the ability of the heart to pump blood** and partially, **by the ability of the exercising tissues to use oxygen**. High VO₂max values require good interaction between the respiratory, cardiovascular and neuromuscular system. VO₂max indeed is connected with the results of an athlete, but does not fully explain its success. There are other factors which contribute to the athletes' performance, such as body weight, fat percent, metabolism, and how economical we are in our movement. Therefore, two marathoners could have same VO₂max but different success at the race.



YOUR RESULT:

HIGHER AEROBIC POTENTIAL

Our analysis has revealed that you are the carrier of such genetic variants which give you a moderate advantage in terms of your aerobic capabilities.

Recommendations:

- According to your genetic makeup, you have higher than average aerobic potential, which is favorable.
- Due to your favorable result it's expected that compared to people with low aerobic predisposition you have to work less for the same results.
- Aerobic potential is under strong genetic influence. This means the influence of genes is pretty strong, while on the other side, environment still is a very important aspect, which means appropriate training is crucial for you, regardless of your higher aerobic potential.
- To get an idea of your current aerobic performance, the easiest way is to test for your VO₂max. Follow the instructions on this page and try to perform the very simple Queens College Step test.
- If you are a professional, you can go through a more precise VO₂Max measurement in a specified exercise physiology laboratory.
- If you are a beginner, steady state, low intensity (60-75%HRmax) aerobic exercise, lasting between 20 to 40 minutes, 3 times a week will be enough to increase your VO₂Max.
- But if you already have plenty of experience in endurance activities, elevating VO₂Max will require a more intensive interval training approach.
- Consulting a professional is highly recommended to make the planning accurate on the one hand and to avoid related injuries on the other.

In general, women reach about 15-30% lower VO₂max values compared to men. This is mostly due to differences in our body composition, especially a higher percentage of body fats and lower percentage of muscle mass in women. Namely, if someone has more muscles, this also means a higher ability of oxygen consumption.

MEASURE YOUR CURRENT VO₂max

You can measure your own oxygen capacity by approximating with a field test. The Queens College Step test is one of many popular variations of step test procedures, used to check your current VO₂max. You only need a roughly 41 cm high step and a (stop) watch.


Procedure: step up and down on the platform at a rate of 22 steps per minute (females) and at 24 steps per minute (males). You have to step using a four-step cadence, 'up-up-down-down' for 3 minutes. After 3 minutes, stop immediately and count the number of heart beats for 15 seconds after 5-20 seconds of recovery. Multiplying this 15 second reading by 4 will give you the beats per minute (bpm) value to be used in the calculation below.

Scoring: an estimation of VO₂max can be calculated from the test results, using the formula below:

men: $VO_2\text{max (ml/kg/min)} = 111.33 - (0.42 \times \text{heart rate (bpm)})$

women: $VO_2\text{max (ml/kg/min)} = 65.81 - (0.1847 \times \text{heart rate (bpm)})$

Rank your current aerobic fitness, using a VO₂max norms chart:



Age (years)	Superior	Excellent	Good	Fair	Poor
20-29	56+	51-55	46-50	42-45	≤ 41
30-39	54+	48-53	44-47	41-43	≤ 40
40-49	53+	46-52	42-45	38-41	≤ 37
50-59	50+	43-49	38-42	35-37	≤ 34
60-69	46+	39-45	35-38	31-34	≤ 30
70-79	42+	36-41	31-35	28-30	≤ 27

Note that the Queens College Step test gives you a rough estimation about your VO₂max. If you have some experience in long and middle distance running, another alternative for VO₂max estimation may be a 3000m Cooper Test. Search the web for the instructions and norm charts. Advanced athletes can also go for a more precise Laboratory VO₂max test, which is based on gas analysis and conducted under the exercise physiologists' supervision.

WARRIOR GENE

Even with years of preparation and training, some people crack under pressure, while others seem to thrive on pressure and adrenaline. The answer particularly lies in the **COMT gene**. Its product is responsible for breaking down the adrenaline. Due to the variant within this gene, some people are “warriors” while others are “worriers” in their nature. The GG carriers (Warriors) have a highly active COMT enzyme; therefore, adrenaline is broken down fast, resulting in a low baseline level of adrenaline. While the AA carriers (Worriers) create the COMT enzyme with the lowest activity, which results in a high baseline level of adrenaline. The AG form comes somewhere in the middle.

For everybody there is an optimal level of adrenaline. The worrier is probably already at his/her optimal level therefore the automatic increase in adrenaline in a challenging situation will push him/her over the edge. Their hands get sweaty, their muscles start shaking, motor skills start to suffer, their brain is working too hard with incoherent thinking as a result and they suffer from tunnel vision. Looking at the warrior, whose adrenaline levels are normally low, the same challenging situation will cause an increase in adrenaline up to the optimal level.

YOUR RESULT:

IN BETWEEN WARRIOR AND WORRIER

The analysis of specific variant within COMT gene has revealed that you are the carrier of the AG genotype, which means you fall somewhere in between Warrior and Worrier type.

Recommendations:

- According to the result of the genetic test, your Warrior potential is not so strong compared to people with GG genotype, while compared to people with AA genotype, your Warrior potential is still better.
- In normal daily situations, your level of adrenaline is somewhere in between compared to the AA and GG carriers.
- In challenging situations, your level of adrenaline is just a little bit over the optimal level, therefore you crawl between warrior and worrier.
- Compared to the AA carriers you have a small advantage in stressful situations, as your head remains clearer.
- As you are the carrier of one A copy of COMT gene, you most probably possess some advantages typical for the AA carriers. It has been shown that the AA carriers get more pleasure out of life but also more misery (bigger highs and lows) and they are more creative in general.



COMT is decreased by estrogen, such that overall COMT activity in prefrontal cortex and other tissues is about 30% lower in females than in males. This diminished COMT activity translates to about 30% higher baseline adrenaline levels in females than males.

GENE FOR MUSCLE FATIGUE

Muscle fatigue can be one of the main obstacles which can prevent athletes from achieving their maximum potential. During exercise, contracting muscles produce lactate and hydrogen ions as a result of a process called glycolysis. Small amounts of lactate operate as a temporary energy source. However, accumulation of lactate during high-intensity exercise can create a burning sensation in muscles and limits muscle contraction, resulting in muscle fatigue. Thus, our body has a system to transport lactate out of muscle cells.

A molecule called monocarboxylate transporter 1 (MCT1) is responsible for the export of lactate across the muscle cell membrane. Specific mutation within the MCT1 gene influences the amount of MCT1 transporters produced and, in this way, affects the rate at which lactate is cleared out of our muscle cells. And this can further influence how quickly someone feels fatigue and can also impact recovery time after a workout.



YOUR RESULT:

FASTER LACTATE REMOVAL

You are the carrier of two favourable copies of the MCT1, which determines faster removal of lactate from muscle cells. Approximately 13 per cent of people in the population have such variant of the MCT1 gene.

Recommendations:

- You fall within the group of AA carriers, who have been shown to produce the highest amounts of MCT1 transporter which is associated with a lower degree of muscle fatigue.
- A faster removal of lactate and therefore faster recovery time is beneficial for athletes with an intense training programme.
- Performing an active cool-down after a workout will help clear lactate even more quickly than simply resting.
- We recommend you do not forget about sufficient intake of magnesium. It is required for the production of high-energy molecules (ATP) and it is crucial in decreasing the accumulation of lactic acid.
- What is more, magnesium is also one of the electrolytes which will help you to maintain fluid balance in your body during and after the workout.
- Foods rich in magnesium includes vegetables (turnip, kale and spinach), legumes (kidney beans) and seeds (sesame and sunflower seeds).



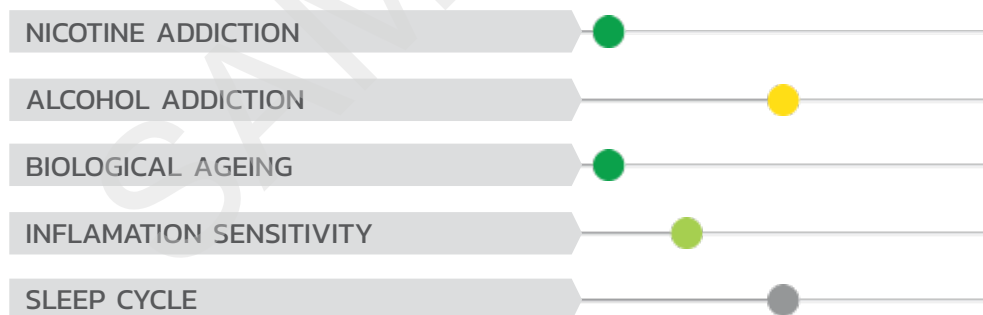
Researchers have found that beside muscle cells, brains cells can also use lactate as a fuel. It's actually lactate that keeps your brain working during prolonged aerobic exercise (like marathons) when blood sugar is exhausted.

GENETICALLY DETERMINED AGEING AND INFLAMMATION

YOU CAN INFLUENCE AGEING AND INFLAMMATION

In this chapter, you will learn about how susceptible you are to nicotine and alcohol addiction. We will also reveal your sleep cycle and rate of aging in comparison to the average population, and whether your genetic makeup determines that a change of lifestyle is important for you.

What is a lifestyle, anyway? Lifestyle is a concept which had been established already in 1929 by an Austrian psychologist Alfred Adler. With this concept, we describe our way of life or our habits. It is generally known that smoking, alcohol drinking, inappropriate diet and lack of physical activity point on an unhealthy lifestyle and are the cause of many health problems. In case we are prone to nicotine or alcohol addiction, it is highly recommended to preventively avoid such habits, as the possibility of addiction is higher. Excessive alcohol drinking and cigarette smoke additionally influence our ageing process, and, in case you have unfavourable genes which determine a higher rate of ageing, we recommend limiting alcohol and giving up smoking.



ALCOHOL ADDICTION

Alcohol addiction is a serious health problem, and, at the same time, a well-studied area for which genetic material is well-known to have an influence on. Alcohol addiction is expressed in behavioural and psychological problems. An individual continues to turn to alcohol, even though it is starting to visibly affect his physical and mental health. On the basis of a lot of research, we can say that our genetic makeup determines approximately 65 percent of our tendency for alcohol addiction. This research is based mainly on twin studies and numerous family studies, where it turned out that the tendency for alcohol addiction is passed down from generation to generation. On a molecular level, the basics of alcohol addiction are extremely complicated, because the occurrence is influenced by several genes, where every gene has a slight influence. We have included in your analysis the genes which were proven by many studies to have a strong influence on alcohol addiction.

YOUR RESULT:

AVERAGE RISK FOR ADDICTION

You have a combination of analysed genes present, which determines an average risk for alcohol addiction.

Recommendations:

- Your risk for alcohol addiction is average, but excessive alcohol drinking is definitely not recommended.
- Alcohol does not quench your thirst, but it dehydrates you. Therefore, do not make thirst an excuse for drinking alcohol.
- The time that you would normally spend for drinking, can be spent for your favourite activity. This way you will effectively redirect your thoughts.
- When you go to social events, order a non-alcoholic beverage or a beverage with low-alcohol content.
- Smaller amounts of alcohol can be beneficial for our health, but be careful, and control the intake.

In Europe, alcohol is the third leading cause of premature death and overall mortality. According to recent data from the World Health Organization, if we calculate the pure alcohol consumption per person aged over 15 years, Moldovans and Czechs drink the most.

SLEEP CYCLE

Do you like to wake up early in the morning or is it in the evening that you work best? Maybe is it just the opposite? It is because of your unique circadian rhythm, often called the “body clock”. Circadian rhythm is the 24-hour internal clock that is running in your brain and tells your body when to sleep, get up, eat and even regulates your body’s temperature and level of hormones.

Understanding your body’s internal clock is the first step towards better sleep and well-being. At the same time, it can help you to adjust day-to-day activities so that your results are optimal. The preference for being a “morning person” who enjoys waking up early or an “evening person” who likes to stay up late at night is partially written in your genes.

Individuals who carry one or two copies of the C allele of CLOCK gene are linked to eveningness and being more sleepy during the day. People with the T allele are more likely to be morning people and have less total sleep duration.



YOUR RESULT:

INTERMEDIATE TYPE

Our genetic analysis has shown that you are a carrier of genetic variants that indicate you are an intermediate type. You are in-between a morning and an evening person.

Recommendations:

- Your genetic makeup defines you as in-between a morning and an evening type.
- Having a routine at roughly the same time each day has a positive effect on our quality of sleep, metabolism and overall mood.
- One study has revealed that intermediate-type people reach peak performance 6.3 hours after waking. At this time, you should perform the most difficult mental or physical activities.
- If you have difficulties getting to sleep, we recommend that you are very strict in turning off the TV, computer, telephone or other electronic devices 1 to 2 hours before going to bed.

Scientists estimate that only about 5 percent of people are natural “short sleepers” who feel well rested after six hours of sleep or less. Are you among them?

YOUR SLEEP CYCLE PATTERNS

Are you not sleeping well at night or waking up tired? Sleep problems may be caused by **lifestyle habits** (e.g eating habits, light exposure, circadian rhythm) **and genetics**.



Sometimes what appear like low quality sleep might just be because you live **incompatibility with your genetic makeup**. If you are an evening type, forcing yourself to get up earlier may result to be always feel sleep-deprived.



SLEEP CYCLE AND APPETITE REGULATION

Differences in sleep cycle have been associated with quality of sleep, obesity and also depression.

Short sleep is frequently connected with obesity and increased caloric intake. Several studies have demonstrated associations between short sleep and higher BMI. In studies that restrict sleep, people consume more calories, particularly from snacks. Better sleep might help people feel less hungry or have more willpower to stick to healthy choices.

HOW CAN I GET A BETTER NIGHT'S SLEEP AND BE HEALTHIER?

By using the following tips you can enjoy better sleep at night and improve how you feel during the day:

- **Keep a regular sleep-wake schedule:** Choose a bed time when you normally feel tired, try to go to sleep and get up at the same time every day. Whether it's 11pm to 7am or 2am to 10pm, always sleep on a consistent schedule. You will feel much more refreshed and energized than if you sleep the same number of hours at different times.
- **Avoid sleeping in:** It's better to choose for a daytime nap rather than sleeping in. In that way you won't disturb your natural sleep rhythm.
- **Nap smart:** Napping is a good way to make up for lost sleep. However, limit naps to 15 to 20 minutes in the early afternoon.
- **Find a career that suits your clock:** Working a 9 to 5 may not be the best idea for an evening type person. If you are able, choose a job that falls more in line with your natural circadian rhythm.
- **Avoid unhealthy snacks:** People who go to bed after 11pm are far more likely to indulge in unhealthy foods than those who go to sleep early (between 7pm and 11pm). They are also more likely to indulge in unhealthy snacks before going to bed, taking in an average 220 more calories each day. Whether you're an evening or a morning person, you should always eat nutrient rich food for optimum health, however evening person need to focus on this even more.

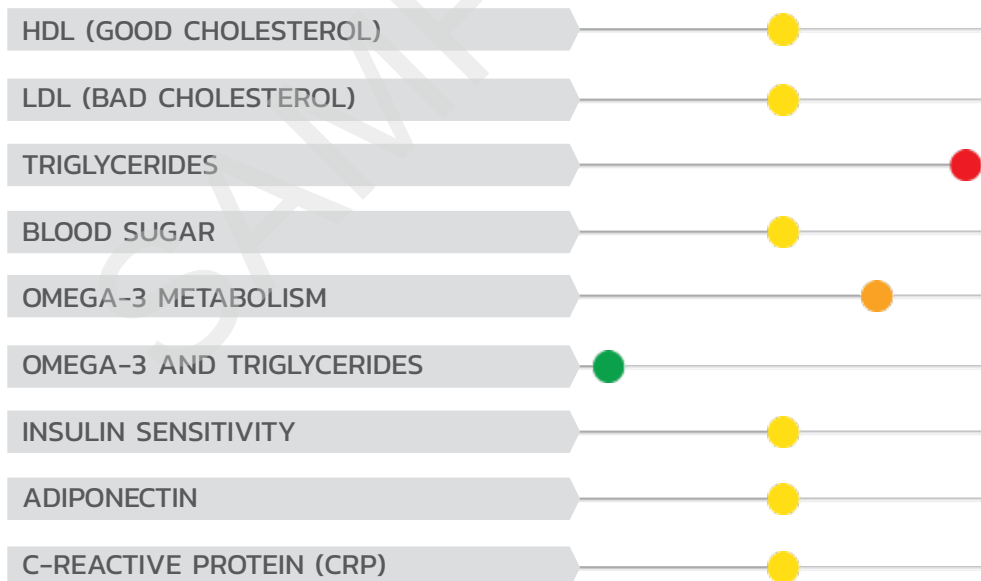
CARDIOVASCULAR HEALTH

WITH AN APPROPRIATE DIET YOU CAN PREVENT NUMEROUS HEALTH COMPLICATIONS

In this chapter, you will learn what levels of LDL and HDL cholesterol, triglycerides and blood sugar are determined by your genes. You will also learn how effective your metabolism of omega-3 fatty acids is, what is your tendency to high triglyceride levels and how efficiently your body regulates the level of insulin. In case of unfavourable genes, it is really important to appropriately adjust your diet and achieve a better health. Knowing your genetic predispositions to these and following the recommendations can lead you to better cardiovascular health.

Cholesterol is a substance which is normally produced by our body, and additionally, it is also found in food. We differentiate good HDL cholesterol and bad LDL cholesterol. In addition to cholesterol, our health is also influenced by blood sugar level, which has to be as low as possible, and triglycerides, which, if increased, have the same effect as bad LDL cholesterol. Inappropriate levels of any of these components can quickly cause cardiovascular complications, increased blood pressure, obesity and diabetes. This is, in a way, prevented by complex body mechanisms which are fighting against the external influences (the influence of diet, smoking, alcohol, etc.) and are trying to maintain their optimal level. How good they are at this, mostly depends on our genes. Therefore, people with unfavourable genes have to be so much more careful about their diet and lifestyle.

Omega-3 fatty acids are a type of unsaturated fat and are essential for our body to function normally. We don't naturally produce omega-3 within our body and it is important we take in enough of it as part of our diet. It has been shown that sufficient daily intake of omega-3 can help towards lowering our blood pressure and level of triglycerides and at the same time is responsible for the proper functioning of the cardiovascular system and the brain.



TRIGLYCERIDES

Triglycerides are actually a type of fat where our body stores energy. They are the most common fats in our body, and their level can quickly become too high. An acceptable level of triglycerides in the blood is less than 1.7 mmol/l, but it is often exceeded. The most common cause for this is a combination of unfavourable genes, an unhealthy diet, and an inappropriate lifestyle. People with a high triglyceride level (this condition is called hypertriglyceridemia) have an increased risk of a heart attack, and this is why it is crucial for our health to keep the triglyceride level as low as possible.

In the following analysis, you will learn the level of triglycerides determined by your genes. The most favourable genes encode a 70 percent lower triglyceride level, whereas the least favourable genes determine a 60 percent higher triglyceride level. It is crucial for carriers of less favourable genes to try to follow our recommendations.



YOUR RESULT:

HIGH LEVEL

The analysis has shown the presence of genes which determine a high triglyceride level, and this is unfavourable.

Recommendations:

- Your genes determine a high triglyceride level, and we advise that you try to follow our recommendations to ensure that the level of triglycerides in your blood is lower than 1.7 mmol/l.
- We do not recommend the use of fat spreads such as butter, cheese spreads and patés. They contain saturated fats, which increase the triglyceride level.
- Try to limit the intake of sugar, desserts and artificially sweetened beverages. Foods that increase the blood sugar also potentially increase the triglyceride level.
- We also do not advise starving, which even further facilitates the increase of triglyceride level.
- Avoid stressful situations because stress is one of the main factors influencing the increase of triglyceride level.
- We recommend the use of unrefined, wholegrain flour as it contains fibre, which binds the excess fat.
- Consider soy products, which have an effect against triglycerides (at the same time, they reduce the LDL cholesterol). We recommend soy proteins, soy milk, tofu or miso.
- We recommend regular physical exercise, which represents a powerful factor in helping to reduce the triglyceride level.

LAY TERM

as low as possible

OPTIMAL STATE

genetic predisposition, diabetes, fatty foods, lack of exercise, stress, smoking, alcohol, added sugars

WHY IT DECREASES

atherosclerosis, heart attack, stroke

WHY IS IT BENEFICIAL

margarine, butter, lard, meat, salamis, whole milk and fatty cheese

Why is it harder to lose fat stores than muscle mass? Proteins that make up our muscles have a fifty percent lower energy level than triglycerides. Practically speaking, this means that triglycerides are twice as light. Therefore, more effort is needed to lower triglyceride levels and lose weight at the expense of excess fat tissue.

BLOOD SUGAR

After we consume carbohydrates, which are the most important source of energy, our body breaks them down into simple sugars, which are then absorbed into the bloodstream. The blood sugar level rises and special mechanisms have to make sure that it quickly drops to a basic level. In some people, this regulation is not adequate, and the blood sugar level drops to a basic level much slower, or it stays permanently increased. A certain influence, apart from diet, is also assigned to our genetic makeup. In various studies, scientists have identified the responsible genes, and now, with their analysis, we can determine whether you have to pay more attention to your diet because of the unfavourable variants of these genes. Certain mutations can occur in these genes, which influence the processes of blood sugar regulation, and these deficiencies can lead to a permanent increase in blood sugar. In our analysis, we have included the most reliable genes which have a great influence, and which represent an efficient tool for predicting your blood sugar level, determined by your genes.



YOUR RESULT:

AVERAGE LEVEL

Your genes determine an average blood sugar level, which is on the verge between favourable and unfavourable. You have variants of genes present which determine an increase of blood sugar, as well as those that reduce blood sugar.

Recommendations:

- Your genetic makeup is not the most favourable one, but your diet is crucial for regulating blood sugar, thus with it you can ensure an optimal blood sugar level, which is below 5.5 mmol/L.
- We recommend that you put foods on your menu which contain more zinc, since it helps to regulate blood sugar. We recommend, for example, tuna, low-fat cheese, whole wheat bread or unmilled rice.
- Try preparing tea out of bean husks, because it has antidiabetic properties (it protects against the increase of blood sugar).
- You can also reduce your blood sugar by adding less sugar to your food (coffee, doughnuts, and biscuits). It is even better to stop adding sugar altogether.
- Use lemon juice regularly, because citric acid in lemons reduces blood sugar level.

WHY THE INCREASE

genetic tendency, obesity, added sugars, too little exercise, stress, high blood pressure

WHY IS IT DANGEROUS

atherosclerosis, heart attack, stroke, weakened immune system

HOW TO REDUCE IT

dieting, regular physical activity, food with low glycaemic load

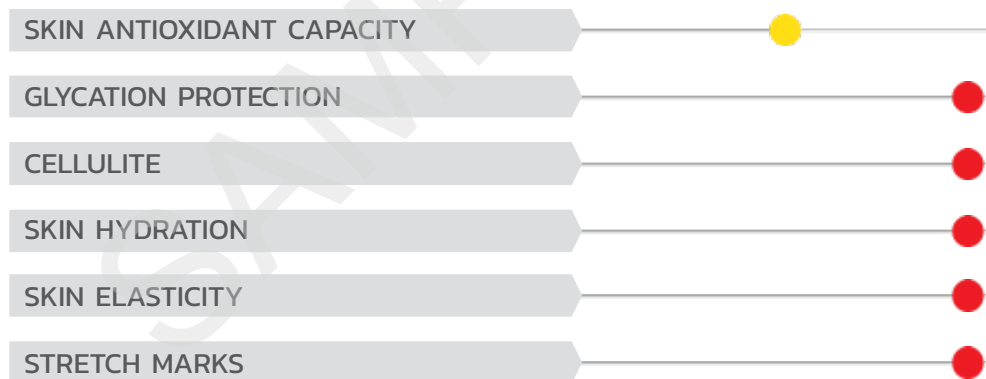
Did you know that glucose is the sole source of energy for the brain and in addition our brain cannot store it? A decrease in blood sugar level is thereby as unfavourable as a sudden increase. When your ability to concentrate decreases, it is very likely a sign that the blood glucose level began to drop.

SKIN REJUVENATION

The skin is the largest organ in your body. It acts as a barrier, isolating you from the environment, protecting your body and contributing to keeping its structures intact, while also acting as a system for communicating with the environment. Because the skin is the outermost organ in direct contact with the environment, it is also the area in which the ageing processes are most clearly seen.

Skin changes are complex processes influenced by heritable and environmental factors. Recent studies have shown that up to 60 percent of skin ageing may be attributed to genetic factors. In this report you will learn more about your skin, about its antioxidant capability, elasticity, benefits related to structural collagen and the skin's hydration capacity. These are the properties that play a key role in the health of your skin.

Although our skin appearance is largely related to genetic factors, environmental factors and nutrition also contribute to it. UV radiation, pollution, changes in temperature, smoking, and suffering stressful situations can largely accelerate the ageing process of your skin. Therefore, the overall knowledge of the genetic and environmental factors that influence the condition of your skin will help you to take care of lifestyle habits and treatments to maintain or enhance a healthy and youthful appearance.



SKIN ANTIOXIDANT CAPACITY

Proper antioxidant protection is of great importance for our health as our body is continually exposed to environmental pollutants and other agents, all of them capable of inducing harmful free radicals in our cells. Free radicals can be naturally produced during some metabolic processes, and can also be induced by different environmental pollutants, too extensive UV exposure, poor nutrition, alcohol consumption and smoking.

To neutralise the harmful effects of free radicals, our body possesses appropriate defence mechanisms. These antioxidant protection mechanisms help to protect our cells against free radicals by cascades of chemical reactions, all this to neutralise or at least to reduce their negative impact. Efficient antioxidant protection helps us to reduce the formation of wrinkles and preserve healthy and youthful-looking skin. If antioxidant protection is weakened, collagen (important for structural support to the skin) degrades, which can further cause progressive damage of cellular structures and premature skin ageing.

NQO1, SOD2, CAT and GPX1 are key enzymes responsible for antioxidant protection. Genetic variations in all the genes encoding these enzymes have been associated with an increased risk of oxidative stress or a reduction in antioxidant response, which increases the ageing of the skin.



YOUR RESULT:

SLIGHTLY LESS EFFICIENT ANTIOXIDANT PROTECTION

The analysis of your DNA has shown that the antioxidant protection of your skin is slightly less efficiency.

Recommendations:

- Vitamin C, vitamin E, coenzyme Q10, resveratrol, green tea, and coffee berry polyphenols have all shown efficiency as antioxidants and free radical scavengers for skin protection.
- Acerola can provide the highest amount of vitamin C. Vitamin C is also found in red pepper, cabbage, rosehip and citruses (oranges, grapefruit and lemons).
- We recommend eating foods which contain plenty of coenzyme Q10, as it is one of the most important antioxidants. Our body produces it, but its production gradually diminishes with age. Food sources include meat (beef, chicken), fatty fish (mackerel, sardines), spinach, broccoli, cauliflower, and nuts. Coenzyme Q10 can be also found in the form of oral supplements and topical preparations.
- We recommend eating foods rich in flavonoids, which are also among important antioxidants. They are found in green tea, citruses, wine and dark chocolate.
- Micronutrients lycopene (found in tomatoes), omega-3 fatty acids (found in fish oil) and isoflavones (found in soy) are also active compounds that help enhance skin antioxidant protection.
- Avoid deep-fat frying at high temperatures, especially with unsaturated oils. Better alternatives include braising, simmering, and sautéing, using olive or coconut oils instead of regular seed oils.

To preserve the antioxidants in fruits and vegetables, keep them in a cool and dry place. That helps to slow down the breakdown of antioxidants, which otherwise naturally occur by different enzymes. Fruits and vegetables should not be trimmed or cut until they are ready to be consumed to prevent unnecessary exposure to oxygen. It is also wise to remember that the skin of some fruits and vegetables contains a higher antioxidant content than the inner parts, such as the skin of an apple or a grape.

SKIN HYDRATION

Skin is a protective barrier which needs to be sufficiently hydrated. Hydration is essential to ensure skin elasticity and proper functioning, especially the skin's outer layer, called stratum corneum, which contains 10–20 percent water. Dry, dehydrated skin can lose its soft, flexible characteristics and may crack or even bleed, which can lead to the increased risk of infection. Dehydrated skin also contributes to the development of visible wrinkles.

Loss of water from the skin must be therefore carefully regulated. Aquaporin-3 (AQP3) is a protein, encoded by the AQP3 gene, that forms pores in the membrane of skin cells through which water can be transported more rapidly inside the cell. AQP3 regulates the movement of water and glycerol molecules across cell membranes, while preventing the passage of ions and other solutes. AQP3 is therefore an essential hydration-regulating element of our skin and is fundamental in general skin hydration, skin elasticity, wound healing and epidermal biosynthesis.

YOUR RESULT:

DECREASED HYDRATION ABILITY

The genetic analysis has revealed that you are a carrier of two unfavourable copies of AQP3 gene. That indicates reduced (natural) hydration ability of your skin.

Recommendations:

- Your genetic makeup determines that you have, compared to people with one or two favourable copies of AQP3 gene, reduced hydration ability and you are therefore more susceptible to dry skin.
- However, you can do a lot to make your skin hydrated, by actively following our recommendations.
- Use moisturisers and night creams regularly. They should include ingredients in one of three different classes to help promote skin hydration: humectant, emollients, and occlusive.
- One of the best humectants is hyaluronic acid. It holds water molecules on the surface of your skin to keep hydrated.
- You can also prepare a facial mask on a basis of honey. Honey is a humectant, which helps your skin to absorb moisture.
- Try to add moisturisers like jojoba oil or rosehip seed oil into your regular cream.
- Do not use soap and water to wash your face. Soap is naturally alkaline therefore it alters your skin's acidity and makes skin dry.
- Try to avoid lotions or creams that include perfumes.
- Your diet has also a significant impact on your skin's health. Lack of micronutrients leads to lack of moisture. Eating salmon, avocado, papaya, olive oil and nuts will help you to hydrate and rejuvenate dry skin.



Do you enjoy taking long hot showers? As pleasant as that can be, the heat from hot water combined with soap softens your skin and slowly strips away its natural, oily protective barrier. That can lead to a feeling of dryness and itchiness. The longer and hotter the shower is, the more moisture you can lose.