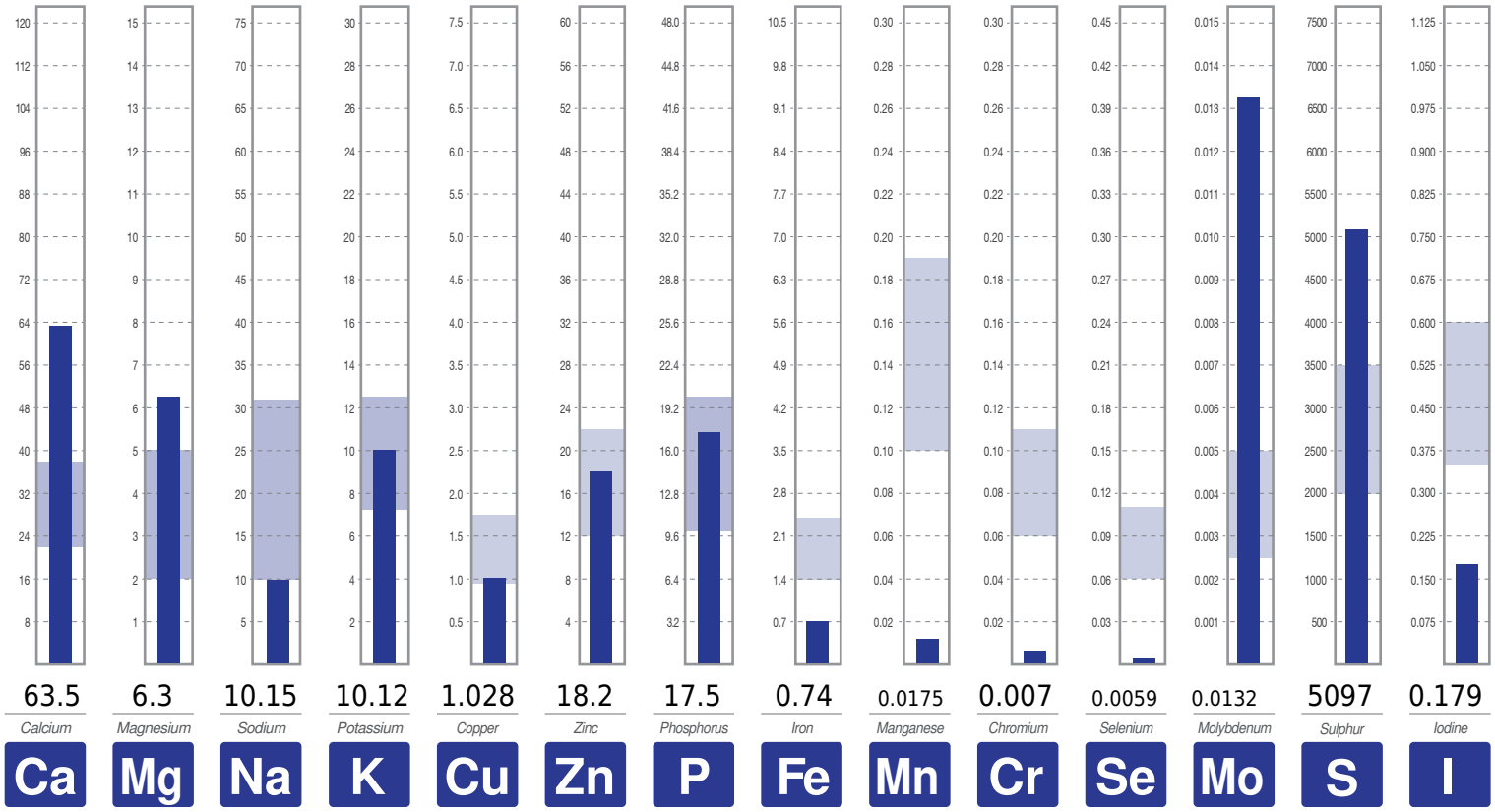
ELEMENTAL HAIR ANALYSIS

11 Somerset Close
Whitstable
Kent CT5 4RA
www.mineralstate.co.uk

Mineral State

Name:	Study Code:	Customer number:
Surname:	Date of study:	

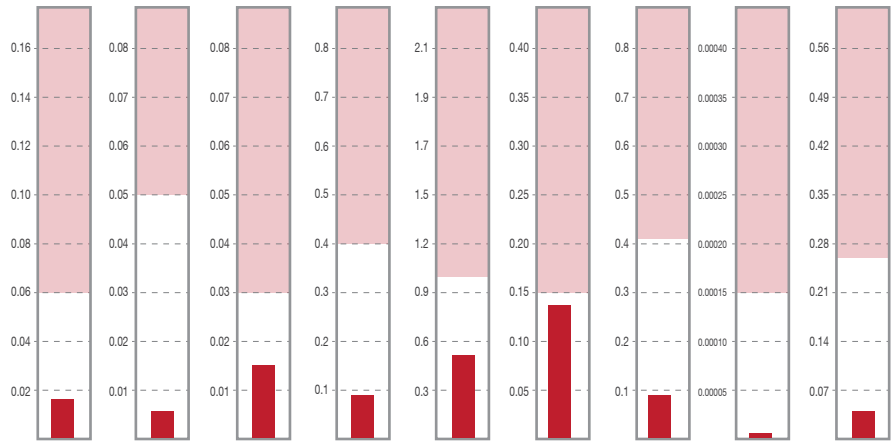
Nutrient Elements



Calcium	Magnesium	Sodium	Potassium	Copper	Zinc	Phosphorus	Iron	Manganese	Chromium	Selenium	Molybdenum	Sulphur	Iodine
63.5	6.3	10.15	10.12	1.028	18.2	17.5	0.74	0.0175	0.007	0.0059	0.0132	5097	0.179
Ca	Mg	Na	K	Cu	Zn	P	Fe	Mn	Cr	Se	Mo	S	I

Previous Results

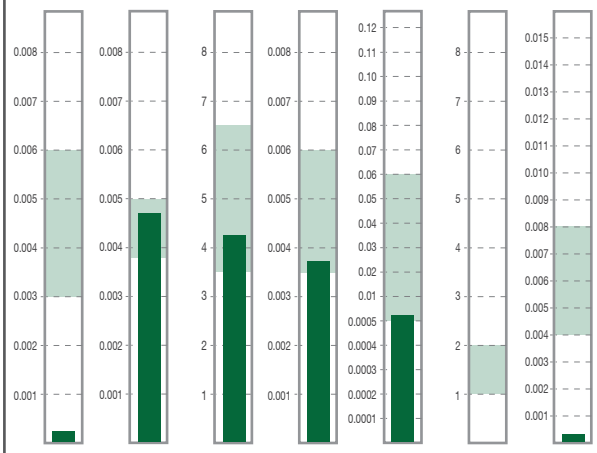
Toxic Elements



Arsenic	Mercury	Cadmium	Lead	Aluminium	Barium	Strontium	Thallium	Nickel
0.0171	0.0064	0.0156	0.0967	0.5359	0.141	0.0949	0	0.0448
As	Hg	Cd	Pb	Al	Ba	Sr	Tl	Ni

Previous Results

Additional Elements



Germanium	Lithium	Silicon	Cobalt	Silver	Boron	Vanadium
0.0003	0.0048	4.35	0.0038	0.0025	N/A	0.0004
Ge	Li	Si	Co	Ag	Bo	V

Previous Results

All element levels are reported in %mg.

Coloured zones indicate acceptable range for nutrient element levels and toxic element elimination.

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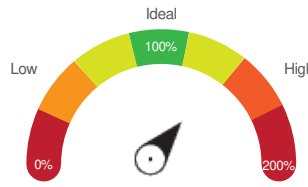
The Nutrient Ratios

Ca/Mg

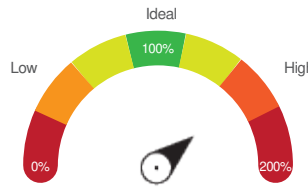
Current Results: 10.08
Previous Results:



Calcium/Magnesium Ideal Ratio: 6.65
Percentage of Ideal: 151 %

Ca/K

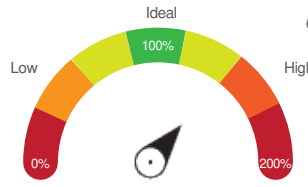
Current Results: 6.27
Previous Results:



Calcium/Potassium Ideal Ratio: 4.00
Percentage of Ideal: 157 %

Ca/P

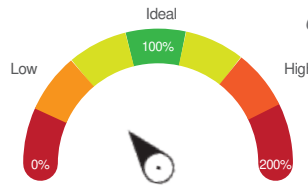
Current Results: 3.63
Previous Results:



Calcium/Phosphorus Ideal Ratio: 2.50
Percentage of Ideal: 147 %

Fe/Cu

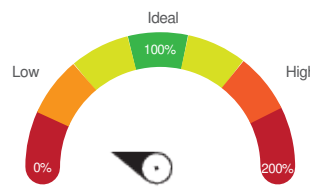
Current Results: 0.71
Previous Results:



Calcium/Phosphorus Ideal Ratio: 0.90
Percentage of Ideal: 71 %

Na/K

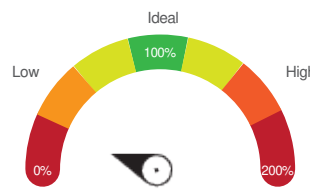
Current Results: 1
Previous Results:



Sodium/Potassium Ideal Ratio: 2.50
Percentage of Ideal: 42 %

Na/Mg

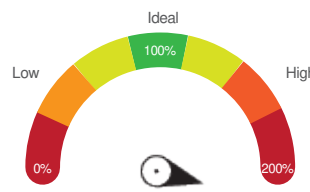
Current Results: 1.61
Previous Results:



Sodium/Magnesium Ideal Ratio: 4.17
Percentage of Ideal: 41 %

Zn/Cu

Current Results: 17.72
Previous Results:



Zinc/Copper Ideal Ratio: 8.00
Percentage of Ideal: >200%

The Nutrient - Toxic Element Ratios

Nutrient-Toxic element ratios can provide insight of protection or burden by the Nutrient Elements (Minerals) relative to the Toxic Elements. These ratios do not reflect the total body burden.

Ca/Pb

Current Results: 656.6
Previous Results:

Percentage of Protection: >200%

Fe/Pb

Current Results: 7.67
Previous Results:

Percentage of Protection: >200%

Zn/Cd

Current Results: 1169
Previous Results:

Percentage of Protection: >200%

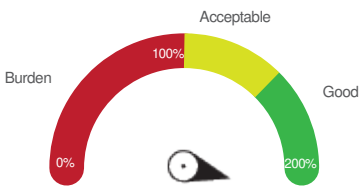
S/Hg

Current Results: >99999
Previous Results:

Percentage of Protection: >200%

Zn/Hg

Current Results: 2853
Previous Results:



Percentage of Protection: >200%

Se/Hg

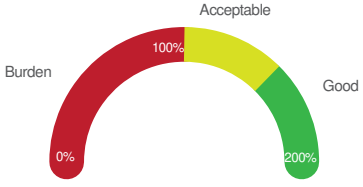
Current Results: 0.93
Previous Results:

Percentage of Protection: 116 %

Additional Ratios

Cu/Mo

Current Results:
Previous Results:



Percentage of Protection:

EHA

ELEMENTAL
HAIR
ANALYSIS

Mineral State

Elemental Hair Analysis (EHA)

Result Interpretation and Scope of Responsibility:

The interpretation of the Elemental Hair Analysis results prepared by Mineral State.co.uk is intended to help understand the proportions and levels of elements in the body from a biochemical perspective. It is based on available scientific literature; however, it does not constitute personalised medical advice.

Any changes in diet, supplementation, or lifestyle should be consulted with a physician or another qualified healthcare professional who will consider the individual's overall health and specific needs.

MineralState.co.uk shall not be held liable for any actions taken based on this interpretation. The report serves an educational purpose only and does not replace a consultation with a medical specialist.

What Your EHA Result Tells You

Elemental Hair Analysis (EHA) allows the assessment of key elements in your hair sample, including both essential and toxic elements. We focus on these elements as they have a direct impact on your health.

1 Nutrient Elements

These elements are essential for proper biochemical processes. They play a role in enzyme activation, gland, organ, and tissue function, hormone production, and the absorption of vitamins, amino acids, and fatty acids. By analysing their levels and ratios, we can identify existing or potential causes of discomfort or health conditions. This enables you to tailor your diet and lifestyle to your individual needs.

2 Toxic Elements

Toxic elements are undesirable in the body. They can disrupt biochemical balance and negatively impact health. They are present in food, air, and water. Elemental Hair Analysis helps determine the type and concentration of these elements and indicates which nutrient elements may aid in their elimination from the body.

3 Element Ratios

This section provides not only the levels of essential and toxic elements but also their ratios. These proportions are key to objectively assessing overall health.

4 Metabolic Type

In this section, you'll explore metabolic types—fast, slow, and mixed—based on oxidation rates, which reflect how quickly your body converts food into energy. Metabolic type is determined by the rate of nutrient turnover in cells, influencing how efficiently your body processes macronutrients, regulates energy production, and responds to stress.

A **fast metabolic type** burns through nutrients quickly, often leading to a higher demand for energy-dense foods and minerals to sustain cellular function. In contrast, a slow metabolic type has a reduced oxidation rate, meaning food is converted into energy more gradually, often requiring dietary and lifestyle adjustments to optimize metabolism. A mixed metabolic type falls somewhere in between, exhibiting characteristics of both fast and slow oxidation.

Understanding your metabolic type helps explain individual differences in nutrient absorption, food tolerances, and overall resilience to environmental and physiological stressors. This section also explores how lifestyle factors and key mineral levels serve as indicators of metabolic activity, supporting the body's ability to maintain balance and optimal health.

Differences Between Elemental Hair Analysis and Blood and Urine Testing

Elemental Hair Analysis is a method that provides information about the concentration of elements in a hair sample. Hair accumulates elements over time, allowing for the observation of changes over a longer period.

Blood and urine tests reflect the current state of the body, accounting for immediate metabolic needs. They are widely used in medical diagnostics and provide point-in-time results, especially useful in urgent situations.

However, blood testing provides only a snapshot in time, as the body is highly skilled at maintaining homeostasis, often regulating blood levels of minerals and nutrients even when tissue stores are depleted or imbalanced.

Scope

- **Elemental Hair Analysis** provides insights into long-term trends in element levels. As hair is a tissue less vital for life functions, it can reflect the influence of diet, environment, and lifestyle.
- **Blood and Urine Testing** reflects dynamic processes taking place in the body and helps monitor its current functioning.

Complementary Approaches

- These methods are not competitive – each offers different insights. Elemental Hair Analysis helps to understand long-term changes, while blood and urine tests monitor the body's present condition.

Testing Technique

- Elemental Hair Analysis uses spectroscopy to assess the elemental content of the hair sample. The results are informative and educational in nature.
- Elemental Hair Analysis (EHA) uses spectroscopy to assess the elemental content of the hair sample. This method involves exposing a hair sample to high temperatures, causing the minerals to emit specific wavelengths of light. By analysing these wavelengths, spectroscopy accurately determines the concentration of each mineral present. This advanced analytical process provides insights into long-term nutrient status, metabolic trends, and potential toxic element exposure, offering a very comprehensive picture of mineral balance.

Summary

- Both hair analysis and blood/urine tests provide complementary information. The result of a Elemental Hair Analysis can serve as an additional tool to support a conscious approach to lifestyle and nutrition.

1 Interactions Between Nutrient Elements

Nutrient elements play a key role in the proper functioning of the body, and their interactions can be divided into **synergistic** and **antagonistic**.

Element Synergy

Synergistic interactions occur when elements support each other in absorption or metabolic function. An example is the cooperation of calcium with vitamin D, magnesium, and vitamin K, which assist in the absorption and metabolism of calcium. Similarly, zinc and magnesium work together in the activation of many enzymes, influencing metabolic processes and hormonal regulation.

Element Antagonism

Antagonistic interactions happen when an excess of one element hinders the absorption or function of another. For instance, an excess of calcium may interfere with magnesium absorption, and too much zinc can affect copper levels. These antagonisms are especially relevant in the intestines, where minerals compete for the same transport mechanisms, and at the cellular level, where imbalances may disrupt metabolic processes.

Element Ratios

The nature of these interactions depends on the **proportions** of elements in the hair sample. Some relationships may shift from synergistic to antagonistic once certain concentrations are exceeded. For example, the calcium-to-magnesium ratio should be approximately 2:1 to maintain optimal balance and avoid side effects related to excess or deficiency.

Monitoring element ratios through Elemental Hair Analysis enables the identification of deficiencies and potential imbalances. This can help tailor diet and supplementation more precisely, supporting overall health and helping prevent issues caused by mineral imbalance.

Levels of Nutrient Elements in Your Hair Sample

Below, we present a table with information on the role of each element, its detected level in your hair sample, and its main dietary sources. This will help you understand which elements may need attention and how to replenish possible deficiencies.

Important:
Before making any changes to your diet or introducing supplements, consult your doctor or a qualified healthcare professional.

Ca Calcium

Calcium contributes to normal blood clotting and energy metabolism; supports muscle function and nerve transmission; is essential for healthy bones and teeth; aids digestive enzyme function; and plays a role in cell division and specialisation.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
22–38	**63,5**	excess

MAIN SOURCES

- meat
- eggs
- small fish (sardines, sprats, herrings)
- dark green vegetables
- seaweed
- sprouts
- unpasteurised milk
- cheese
- almonds
- dandelion
- clover
- chamomile

Mg Magnesium

Magnesium helps reduce tiredness and fatigue; supports electrolyte balance and energy metabolism; contributes to proper nervous system function; supports muscle and bone health; helps in protein synthesis and maintaining normal psychological function.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
2–5	**6,3**	excess

MAIN SOURCES

- meat
- small fish (sardines, sprats, herrings)
- egg yolk
- unpasteurised milk
- cocoa
- nuts
- almonds
- bran
- dark green vegetables
- seaweed
- lemon
- sprouts
- chamomile
- parsley leaves

Na Sodium

Sodium *plays a key role in regulating extracellular fluid volume and maintaining acid-base balance. It is involved in nerve impulse transmission and may support muscle contractions and nutrient transport into cells.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
10–31	**10,15**	norm

MAIN SOURCES

- rock salt
- sea salt (never refined!)
- olives
- eggs
- butter
- small fish (sardines, sprats, herrings)
- seaweed
- vegetables

K Potassium

Potassium supports normal functioning of the nervous system and helps maintain normal blood pressure. It also supports muscle function *and nutrient transport into cells and may counteract protein presence in urine and water retention.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
7,5–12,5	**10,12**	norm

MAIN SOURCES

- sardines
- herrings
- meat
- cheese
- avocados
- yeast
- figs
- nuts
- groats
- beans
- garlic
- onions
- dark green vegetables (consume the broth in which vegetables are cooked!)

Cu Copper

Copper helps maintain the proper condition of connective tissues; contributes to normal energy metabolism; supports proper nervous system function; facilitates proper iron transport in the body; helps maintain proper pigmentation of hair and skin; and aids the immune system and protects cells from oxidative stress.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,95–1,75	**1,028**	norm

MAIN SOURCES

- meat
- nuts
- almonds
- avocados
- beans
- beetroot
- mushrooms
- raisins
- chocolate
- garlic
- grains

Zn Zinc

Zinc supports the normal function of the immune system; helps maintain healthy bones, hair, and nails; contributes to normal fertility and reproduction; supports proper vision and cognitive function; protects cells from oxidative stress; helps maintain acid-base balance; contributes to normal metabolism of fatty acids and vitamin A; and aids in proper DNA synthesis.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
12–22	**18,2**	norm

MAIN SOURCES

- meat
- organ meats
- eggs
- pumpkin seeds
- sunflower seeds
- grains
- seafood

P Phosphorus

Phosphorus contributes to normal energy metabolism; supports the function of cell membranes; helps maintain healthy bones and teeth; *may support kidney function and heart contractions.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
11–21	**17,5**	norm

MAIN SOURCES

- meat
- organ meats
- eggs
- small fish (sardines, sprats, herrings)
- nuts
- beans
- peas
- yeast
- garlic
- grains

Fe Iron

Iron helps produce red blood cells and hemoglobin and supports oxygen transport in the body. It also contributes to normal cognitive function and energy metabolism and helps reduce tiredness and fatigue. It plays a role in the process of cell division.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
1,4–2,4	**0,74**	deficiency

MAIN SOURCES

- meat
- organ meats (especially liver)
- eggs
- dark green vegetables
- avocados
- beets
- bell peppers
- almonds
- nettle
- licorice
- rosehip

Mn Manganese

Manganese contributes to the maintenance of normal energy metabolism and the maintenance of healthy bones. It supports the formation of connective tissues and protects cells from oxidative stress.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,1–0,19	**0,0175**	deficiency

MAIN SOURCES

- walnuts
- egg yolk
- seaweed
- dark green vegetables (the darker, the better)
- tea
- grains
- parsley leaves
- sprouts

Cr Chromium

Chromium contributes to the maintenance of normal macronutrient metabolism and helps maintain normal blood glucose levels. *It may also assist in combating atherosclerosis and support healthy cholesterol levels.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,06–0,11	**0,007**	deficiency

MAIN SOURCES

- meat
- liver
- kidneys
- yeast
- eggs
- cheese
- mushrooms
- nettle
- brown rice
- beets

Se Selenium

Selenium contributes to normal thyroid function; supports the immune system and protects cells from oxidative stress; helps maintain healthy hair and nails; and plays a role in normal spermatogenesis.*

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,06–0,11	**0,0059**	deficiency

MAIN SOURCES

- meat
- liver
- eggs
- yeast
- onions
- garlic
- Brazil nuts
- dandelion
- parsley
- nettle

Mo Molybdenum

Molybdenum *is part of metalloenzymes such as xanthine oxidase, sulfite oxidase, aldehyde oxidase, and others involved in the metabolism of proteins, fats, and purines.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,0025–0,005	**0,0132**	excess

MAIN SOURCES

- beans
- peas
- green vegetables
- organ meats
- buckwheat
- brown rice
- eggs

S Sulfur

Sulfur *is a component of cysteine, cystine, methionine, taurine, glutathione, lipoic acid, biotin, vitamin B1, and coenzyme A. Sulfuric acid produced in the body is used by the liver to detoxify metabolites and xenobiotics. Sulfur may reduce selenium toxicity and acts antagonistically toward heavy metals.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
2000–3500	**5097**	excess

MAIN SOURCES

- meat
- eggs
- small fish (sardines, sprats, herrings)
- garlic
- onions
- horseradish
- cabbage
- beans
- sprouts
- cranberries

I Iodine

Iodine supports the normal production of thyroid hormones and thyroid function; contributes to normal energy metabolism; helps maintain cognitive function; supports nervous system function and healthy skin; *commonly used to support pregnant and breastfeeding women.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,35–0,6	**0,179**	deficiency

MAIN SOURCES

- eggs from organic farms
- seafood from unpolluted regions
- small fish species
- hazelnuts
- broccoli, spinach, baby carrots (ideally grown near the sea)
- seaweed
- cottage cheese

Ge Germanium

Germanium *may neutralise free radicals, potentially slowing aging and protecting against chronic diseases. Some studies suggest that organic germanium compounds can enhance immune function. Its biological role is not fully confirmed and is still under investigation in the context of pharmacological applications.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,003–0,006	**0,0003**	deficiency

MAIN SOURCES

- most medicinal herbs (especially comfrey)
- ginger
- aloe
- garlic

Li Lithium

Lithium *has been observed to be effective in bipolar disorder in both manic and depressive phases. It may influence many neurotransmitter pathways in cells and may have neuroprotective properties, offering potential in Alzheimer's or other neurodegenerative conditions. Lithium may also affect metabolism and hormonal balance, including insulin-like effects on carbohydrate metabolism, leptin regulation, reduced oestrogen and luteinizing hormone levels, and increased glucocorticoids.**

NORMA	YOUR VALUE	YOUR LEVEL
0,0038–0,005	**0,0048**	norm

MAIN SOURCES

- organic mustard
- cooked vegetables
- seaweed
- sprats
- sardines
- blue corn
- peanuts

Si Silicon

Silicon *plays an important role in the formation and function of connective tissue, as it is involved in bone development, collagen production, and bone matrix mineralisation. It may also aid in cardiovascular protection and supports the flexibility of blood vessel walls.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
3,5–6,5	**4,35**	norm

MAIN SOURCES

- beets
- dark green vegetables
- dandelion
- brown rice
- onion
- horseradish
- cucumbers

Co Cobalt

Cobalt *primarily acts as a component of hydroxocobalamin, essential for regulating red blood cell production. In the body, it is mainly found as vitamin B12, a cofactor for two important enzymes: methylmalonyl-CoA isomerase and ribonucleotide reductase. The function of vitamin B12, and thus cobalt, is closely linked to nucleic acid synthesis.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,0035–0,006	**0,0038**	norm

MAIN SOURCES

- eggs
- beef
- liver
- milk
- dark green vegetables (the darker the better)
- small fish (sardines, sprats, herrings)
- seafood from unpolluted areas

Ag Silver

*Although silver does not serve any essential biological function in the human body, it is known for its strong antibacterial properties and significant immunostimulatory effects.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,0005–0,06	**0,0025**	norm

V Vanadium

Vanadium *may support proper growth, thyroid metabolism, and bone mineralisation. It may play a role in lipid and carbohydrate metabolism and support various enzymes, thus affecting cell membrane permeability and elasticity.**

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
0,004–0,008	**0,0004**	deficiency

MAIN SOURCES

- seafood (from unpolluted areas)
- whole grain bread
- parsley leaves
- vegetable oils
- nuts
- root vegetables
- pepper

*Information written in regular font is based on confirmed health claims. *Italicized sections are based on publicly available knowledge.*

Note:
In case of any excess or deficiency of the above elements, medical or dietary consultation is recommended.

High mineral levels on an Elemental Hair Analysis (EHA) test don't always indicate an excess in the body; rather, they can signal that the mineral is not being properly utilized. In some cases, elevated levels reflect a loss of the mineral into soft tissues due to imbalances in metabolism, poor cellular uptake, or dysfunction in regulatory systems. This can be a response to stress, inflammation, or detoxification processes, meaning that even seemingly high readings may actually indicate a functional deficiency. Proper interpretation of EHA results considers not just mineral levels but also their ratios and patterns to assess true mineral status and bioavailability.

2 Toxic Elements

Toxic Elements – Health Risks and Protection

The excessive presence of toxic elements in the environment poses a serious challenge to the body, as these substances can be found in water, food, air, cosmetics, and various everyday products. They may contribute to aging processes, disease development, and other health issues.

Impact of Toxic Elements on the Body

Toxic elements can disrupt normal bodily functions. In the case of nutrient deficiencies, toxic elements may substitute for them in metabolic processes, which can negatively impact health. Therefore, maintaining adequate levels of essential nutrients is crucial not only for proper body function but also for protection against the harmful effects of toxic elements.

Nutrient Elements vs. Toxic Elements

Essential nutrients such as calcium, magnesium, zinc, and iron have antagonistic effects on toxic elements. The right amounts and proportions of these nutrients may help neutralise, prevent the accumulation of, and eliminate toxic substances from the body. They act as a natural protective barrier.

Eliminating Toxic Elements

Key strategies to support the body in detoxifying toxic elements include:

- A **healthy diet** rich in essential nutrients.
- Good **gut health** and **regular bowel movements**.
- An **active lifestyle** that supports lymphatic system function, which plays a crucial role in eliminating toxins and metabolic waste from the body. Supporting the lymphatic system through physical activity and a healthy lifestyle is essential for maintaining well-being.
- **Avoiding excessive exposure** to sources of toxic elements.
- Supporting natural **detoxification** mechanisms with antioxidants, dietary fibre, chlorophyll (found in spirulina and chlorella), and individually tailored chelation therapies guided by a specialist.

As Arsenic

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,06	0,0171	norm

POSSIBLE SOURCES

- pesticides
- tap water
- refined salt
- beer
- cosmetics
- pigments
- glass and mirror production
- construction wood
- fungicides
- insecticides
- contaminated food
- log burning/wood burning stoves
- cigarette tobacco & vaping
- Rice and rice products

Hg Mercury

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,05	0,0064	norm

POSSIBLE SOURCES

- "silver" dental fillings
- fish (smaller species are less contaminated)
- seafood
- vegetables
- air
- mines
- paper mills
- chlorine
- adhesives
- fabric softeners
- waxes

Cd Cadmium

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,03	0,0156	norm

POSSIBLE SOURCES

- refined food
- seafood
- large fish
- tap water
- cigarettes
- car exhaust
- galvanized pipes
- cadmium-coated cookware and containers
- waste incinerators
- industrial facilities using cadmium (e.g., oil mills)

Pb Lead

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,4	0,0967	norm

POSSIBLE SOURCES

- hair dyes
- lipsticks
- mascaras
- pesticides
- tap water
- industrial paints
- battery manufacturing
- metal alloys
- varnishes
- fish (smaller species are less contaminated)

Al Aluminum

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 1	0,5359	norm

POSSIBLE SOURCES

- cookware
- canned beer and soft drinks
- refined salt
- baking powder
- tap water
- antacids
- deodorants
- shampoos
- bleached flour
- processed cheese
- occupational exposure
- waste incinerators
- certain medications

Ba Barium

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,15	0,141	norm

POSSIBLE SOURCES

- tap water
- landfills
- fireworks and pyrotechnics
- paints
- coal-fired power plants

Sr Strontium

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,41	0,0949	norm

POSSIBLE SOURCES

- luminescent materials
- pigments
- dye industry
- fireworks and pyrotechnics
- glass industry
- metallurgical and chemical industries

Tl Thallium

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,00015	0,00001	norm

POSSIBLE SOURCES

- industrially polluted water from the electronics and pharmaceutical industries

Ni Nickel

REFERENCE RANGE	YOUR VALUE	YOUR LEVEL
do 0,26	0,0448	norm

POSSIBLE SOURCES

- cookware
- hydrogenated vegetable oils
- margarines
- seafood
- water
- air
- cigarettes
- electroplating industries

Note:
In case of any excess or deficiency of the above elements, medical or dietary consultation is recommended.

3 Element Ratios

Much of your body's proper functioning depends on maintaining mineral balance. The correct proportions between elements are essential for good health.
That's why Elemental Hair Analysis (EHA) evaluates the most important element pairs, as their mutual ratios significantly affect your health.

For example:

- A **deficiency in vitamins A, C, and B2** can lead to iron deficiency.
- **Zinc deficiency** may impair the liver's ability to release vitamin A.
- **Excess vitamin C** may cause copper deficiency, but also improves the absorption of iron, zinc, and magnesium.
- **Excess copper** increases the body's demand for vitamin C and zinc.

Key Element Ratios

There are 14 known nutrient element ratios, which are interrelated and influence each other. Below we present the **6 fundamental ratios** essential for evaluating your body's functioning:

- **Calcium / Magnesium (Ca/Mg)**
- **Sodium / Potassium (Na/K)**
- **Calcium / Potassium (Ca/K)**
- **Sodium / Magnesium (Na/Mg)**
- **Zinc / Copper (Zn/Cu)**
- **Iron / Copper (Fe/Cu)**

Analysing these ratios helps identify potential mineral imbalances and determine the steps needed to restore balance.

Trends and Tendencies

A diet poor in vitamins and trace minerals, excessive stress, lack of physical activity, and a fast-paced lifestyle can all disrupt your body's mineral balance. Long-term deficiencies or excesses may impair metabolism.

To prevent such issues, it is important to maintain a well-balanced diet and, when needed, introduce targeted supplementation based on your body's individual needs. Knowing your personal mineral deficiencies and excesses enables you to nourish your body appropriately and restore balance.

Trends and tendencies in your mineral ratios can also reveal which health issues may arise or persist due to imbalances.

Ca Calcium : Mg Magnesium

- Known as the “blood sugar ratio,” as both minerals are involved in insulin sensitivity and release and glucose metabolism.
- Reflects, among other things, the condition of the parathyroid glands, pancreas, and adrenal glands.
- Calcium stimulates insulin release and regulates muscle contraction, while magnesium keeps calcium soluble and prevents excessive deposition.

REFERENCE RANGE	5,60–8,40	YOUR RATIO	10,08	PROPORTION	HIGH

REDUCE INTAKE	INCREASE INTAKE
Calcium	-

POSSIBLE TRENDS AND TENDENCIES

Ratio 7-12
Often associated with episodes of hypoglycemia and increased parathyroid activity.

Na Sodium : K Potassium

- Crucial for maintaining the electrical potential of cells.
- Known as the ‘vitality’ or life or death’ ratio. Considered the most important ratio.
- Imbalance may affect hormonal regulation (e.g., aldosterone, cortisol), as well as kidney, liver, and nervous system function.

REFERENCE RANGE	1,92–2,88	YOUR RATIO	1	PROPORTION	LOW

REDUCE INTAKE	INCREASE INTAKE
Sodium	-

POSSIBLE TRENDS AND TENDENCIES

Ratio 1-2,4
Often associated with the risk of impaired liver and kidney function, as well as adrenal exhaustion.

Zn Zinc : Cu Copper

- Known as the “hormone ratio,” as both minerals affect the balance of sex hormones and neurotransmitters.
- Indicates balance important for nervous, immune, and hormonal systems.
- Zinc is needed for steroid hormone synthesis; copper influences neurotransmitter production (dopamine, norepinephrine).

REFERENCE RANGE	6,40–9,60	YOUR RATIO	17,72	PROPORTION	HIGH

REDUCE INTAKE	INCREASE INTAKE
Zinc	Zinc

POSSIBLE TRENDS AND TENDENCIES

Ratio above 15
May indicate a copper deficiency (witch relatively high zinc levels)

Ca Calcium : K Potassium

- Known as the “thyroid ratio,” as both minerals significantly affect thyroid activity.
- Disruption may suggest a tendency toward hypo- or hyperthyroidism—even if blood results are normal.

REFERENCE RANGE	3,36–5,04	YOUR RATIO	6,27	PROPORTION	HIGH

REDUCE INTAKE	INCREASE INTAKE
Calcium	Potassium

POSSIBLE TRENDS AND TENDENCIES

Ratio 4-7
May indicate a slight decrease in thyroid function.

Na Sodium : Mg Magnesium

- Often associated with adrenal function, since sodium levels are strongly influenced by aldosterone.
- Heavy metals (iron, nickel, cadmium) may also disturb this ratio

REFERENCE RANGE	3,20–4,80	YOUR RATIO	1,61	PROPORTION	LOW

REDUCE INTAKE	INCREASE INTAKE
Magnesium	Sodium

POSSIBLE TRENDS AND TENDENCIES

Ratio 1-2
Often associated with moderate adrenal exhaustion (intensified stress symptoms).

Fe Iron : Cu Copper

- Often associated with oxidative stress, immune function, and energy production, as both iron and copper play key roles in mitochondrial activity.
- Imbalances in this ratio may indicate poor iron metabolism, inflammation, or impaired detoxification.
- Heavy metals such as lead and mercury can interfere with iron and copper balance.
- Low Fe/Cu ratios may suggest viral infections, while high Fe/Cu ratios can indicate bacterial infections.

REFERENCE RANGE	0,72–1,08	YOUR RATIO	0,71	PROPORTION	LOW

REDUCE INTAKE	INCREASE INTAKE

POSSIBLE TRENDS AND TENDENCIES

Note:
All ranges and interpretations presented above are illustrative suggestions. Proper evaluation requires considering other factors (including heavy metal presence) and individual health conditions. In case of doubt, consult a qualified specialist.

Elemental Hair Analysis and Hormones

A\Elemental Hair Analysis provides valuable insights into the body's mineral balance, which can significantly influence the functioning of the endocrine system. Specific minerals—and particularly the ratios between them—can affect the activity of key endocrine glands such as the thyroid, adrenal glands, and pancreas.
Elemental Hair Analysis can support the identification of factors such as metabolic type (fast/slow/mixed), energy potential, carbohydrate tolerance, antioxidant capacity, and susceptibility to neurohormonal imbalances.

Thyroid and Metabolism

The **calcium-to-potassium (Ca/K) ratio** is one of the key indicators associated with thyroid function. Deviations from the optimal ratio may suggest either hyperthyroidism or hypothyroidism. Thus, hair analysis can help detect subtle changes in thyroid hormone regulation, which in turn affects metabolic rate and overall well-being.

Ca Calcium : K Potassium					
REFERENCE RANGE	3,36–5,04	YOUR RATIO	6,27	PROPORTION	HIGH

Adrenal Glands and Stress Response

The **sodium-to-magnesium (Na/Mg) ratio** correlates with adrenal activity and the levels of cortisol and aldosterone—hormones involved in stress response and fluid-electrolyte balance. Imbalances in this area may manifest as energy crashes, mood swings, sleep disturbances, or difficulty coping with stress.

Na Sodium : Mg Magnesium					
REFERENCE RANGE	3,20–4,80	YOUR RATIO	1,61	PROPORTION	LOW

The Role of Zinc and Copper

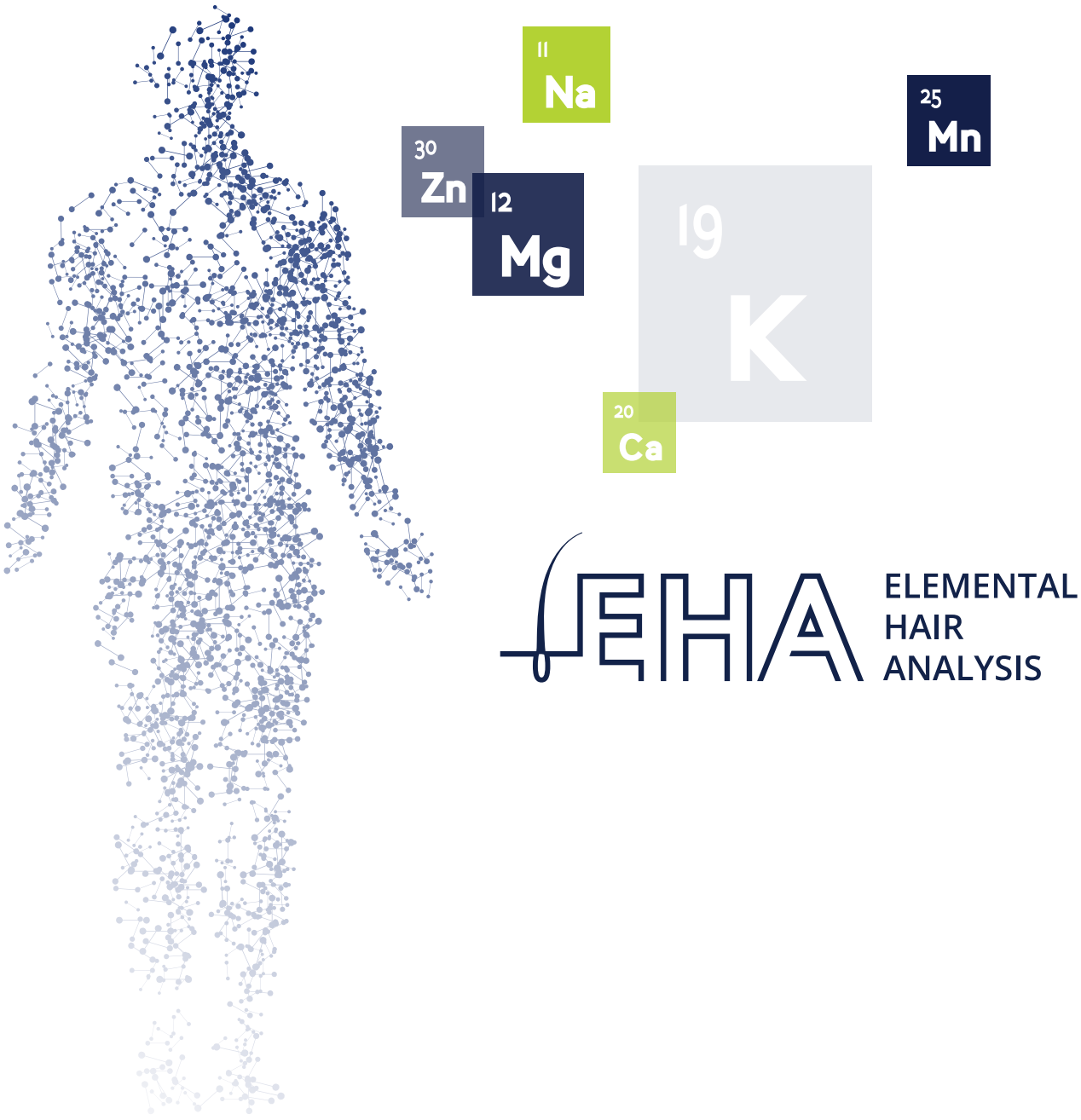
The **zinc-to-copper (Zn/Cu) ratio** may influence the production of sex hormones and neurotransmitters. Zinc supports the synthesis of progesterone and testosterone, while copper is associated with oestrogen levels and mood-regulating neurotransmitters. An improper balance between these minerals may contribute to hormonal and emotional disturbances such as anxiety or irritability. Hair analysis can help assess these relationships, providing valuable guidance for individuals dealing with hormonal issues or mood fluctuations.

Zn Zinc : Cu Copper					
REFERENCE RANGE	6,40–9,60	YOUR RATIO	17,72	PROPORTION	HIGH

Tailored to Individual Needs

Elemental Hair Analysis does more than simply indicate mineral deficiencies or excesses—it reveals the intricate interrelationships between elements. This broader perspective allows for a deeper understanding of the body's overall condition. The insights gained from EHA can support more precise dietary adjustments, supplementation, and lifestyle strategies—regardless of metabolic type or existing imbalances.

W=As a result, EHA plays an important role in understanding how minerals and their interactions contribute to a **holistic evaluation of health**, supporting the development of personalized wellness strategies.



3 Slow Metabolism

Your elemental hair analysis result indicates a **slow metabolic type**.

In simplified terms, a slow metabolism—marked by reduced energy production—may suggest a slowed function of the **thyroid and adrenal glands**. This pattern is often observed in individuals experiencing physical and mental overload, where the body struggles to efficiently mobilise energy for daily activity.

In such cases, the **sympathetic nervous system** ("fight or flight") gradually loses its dominant role, and the body increasingly shifts into a **parasympathetic state** ("rest and digest"), aimed at conserving energy and supporting regeneration. Energy surges become sporadic and short-lived—the body still attempts to activate the sympathetic system, but **nutrient deficiencies**, particularly those minerals crucial for mitochondrial function, may impair energy production. Additionally, the **presence of toxic elements** can disrupt metabolic processes and weaken organ function, placing even more strain on the body.

This gradual shift in nervous system dominance is an **adaptive mechanism**, but over time, it can lead to **further metabolic suppression**. This phenomenon can also affect children—especially when nutrient deficiencies and exposure to toxic elements interfere with proper physiological regulation.

Your hair test result shows a **calcium-to-potassium ratio higher than 4** and a **sodium-to-magnesium ratio lower than 4.1**, which may indicate a slow metabolic rate. The degree of slowing tends to increase with the **greater imbalance** of these ratios—meaning the **higher the Ca/K ratio and the lower the Na/Mg ratio**, the slower the metabolism, the lower the available energy, and the more significant the nutritional deficiencies may be.

ELEMENT RATIOS	VARIABLE METABOLISM	YOUR METABOLISM
Ca Calcium : K Potassium	over 4	6,27
Na Sodium : Mg Magnesium	under 4,1	1,61

Result Interpretation, Scope of Responsibility, and Additional Consultations:

The interpretation of hair elemental analysis results prepared by Lifeline Diag Sp. z o.o. is intended to facilitate the understanding of element levels and ratios in the body within a biochemical context. The interpretation is based on available scientific literature but does not constitute individual medical advice.

Any changes to diet, supplementation, or lifestyle should be consulted with a physician or another qualified specialist who will consider the individual's overall health status and personal needs.

Lifeline Diag Sp. z o.o. does not bear responsibility for any actions taken based on this interpretation. The report is intended for educational purposes only and does not replace an individual consultation with a specialist.

The Lifeline Diag Dietitian Team