



PRODUCT DOCUMENTATION

FYTOMINERAL



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Text of the leaflet

Fytomineral is a concentrated colloid solution of minerals enriched with bioinformation.

From the perspective of traditional Chinese medicine, Fytomineral influences in particular the meridian of the **triple energiser, spleen, pancreas, stomach, liver, gall bladder, urinary bladder, and the central, connective, conception and control meridians**. It also influences a number of **side branches and musculo-ligamental meridians**.

Fytomineral influences not only meridians, but it particularly nourishes cells with individual minerals. Through its role in the nourishment of cells and in the energy system of the body Fytomineral influences practically all important centres of our organism.

Fytomineral contains a highly concentrated colloid solution of 64 elements of the Mendeleev periodic table in a natural form. Colloid minerals are obtained through an original procedure, by wet path, from the remains of a rain forest which grew on the Earth 100 million years ago. The obtained raw material is then concentrated to the required density, finally passing a number of special filters, to obtain a high concentrate of colloid minerals in liquid form.

Differences between colloid minerals obtained from plants and other forms of minerals:

Plants contain elements in natural organic form. These minerals are best acceptable for human, animal and plant cells. Their availability is **as much as 98%**. The

typical form of minerals available on the market e.g. in the form of milled dolomite containing magnesium and calcium is available only in **4–5%**. The availability of more advanced products with chelate bounds is approximately **45%**. This implies that our bodies can best avail of the minerals obtained by the above mentioned method from fossil plants.

Properties of colloid minerals:

Colloid minerals are considered the most perfect form of minerals for their **availability reaching as much as 98% and zero toxicity**. When someone drinks a solution of an inorganic mineral, intoxication may occur. In their colloid form, however, minerals are non-toxic and there is no jeopardy of overdosage. Colloid minerals are mineral substances solved in water which well pass into human cells. **Thus they help the human body to maintain a perfect bioelectric balance**, which is the basis of good health and longevity. Moreover, they **increase the availability of vitamins and other substances necessary for the nourishment of man**. Colloid minerals also help to **regulate hormonal activities of the endocrine system and have a major role in DNA synthesis**. They are an essential part of any enzyme or they act in synergy with enzymes, so the use of Fytomineral enhances the production of enzymes which may form only in the presence of trace minerals in the body. An interesting and important property of colloid minerals is their removal (substitution) role. For example, colloid

nickel, barium, aluminium, and other elements of Mendeleev period table in their colloid form are able to remove from the body the ion, i.e. toxic (waste) form of the same element. This means that colloid minerals have a **detoxifying function** in the human body. Elements in their natural form, such as vanadium, chromium, manganese, and zinc accelerate the regeneration of pancreas and the production of insulin. Their effects in Fytomineral are further enhanced by bioinformation, and thus play a major role in improving the progress of diabetes.

Effects of colloid minerals:

- They induce and maintain electric balance in the human body.
- They are necessary for the correct progress of most biochemical processes.
- Enzymes may be produced in the body only in the presence of mineral substances which are in colloid form.
- The body cannot receive vitamin E without a certain form of colloid zinc.
- They increase the availability of vitamins necessary for the nutrition of man.
- They play an important role in the synthesis of DNA, which is the base for the renewal and multiplication of cellular structures.
- They regulate the metabolism of human cells and are necessary for one's health.
- They control the hormonal activity of the human endocrine system.

- They detoxify the organism and prevent premature ageing.
- They accelerate the regeneration of the pancreas and enhance insulin production.
- Due to their colloid form they can enter the body practically through any channel, including the skin.

Use of Fytomineral:

- In viral infections and impaired immunity;
- In lack of vital energy, stresses and fatigue;
- In eczema and various types of rash;
- For itchy skin;
- For the regeneration and revitalisation of the whole body, bones, teeth, hair, and nails;
- In osteoporosis, diabetes, poor haematogenesis;
- For better brain function and activation of the hormone system;
- In central nervous system disorders;
- For the nutrition of muscles and for elimination of muscular spasms;
- To supplement minerals as necessary in recovery from serious diseases;
- To detoxify the body and regenerate cells;
- To increase the availability of vitamins from food.

Further possible uses – sport, cosmetics, plants, animals:

- **Mineral water** – for the preparation of outstanding mineral water containing natural form of minerals – 15 drops for half a litre of quality water are sufficient.

- **Ion drink** – after physical exercise and training, add 15 drops of colloid minerals to a glass of water. Regeneration, muscle growth and availability of vitamins will improve.
- **Hair regeneration** – add 15 drops to half a litre of water and moisten your hair and hair skin with this mineral water.
- **Nail regeneration** – after each nail polish removal or for breaking nails and nails of poor quality, apply the concentrated solution of colloid minerals to each nail. This will vitalise their appearance and structure.
- **Skin regeneration** – by adding 15 drops to half a litre of water you can obtain mineral water for tired skin. This way you can also influence various types of rash and eczema, if your skin does not tolerate anything but clean water. Wipe affected places 3 times a day. Always prepare fresh water. Fytomineral may be also added to various creams and masks.
- **Plant nutrition** – add 4 drops of the concentrate to one litre of water.
- **For pets** – pets also need proper mineral nutrition – for small animals (up to 10kg) 2 drops in 100ml of water are sufficient.

Bioinformation

Bioinformation represents frequencies which simulate the control frequencies of subcortical brain centres that regulate the vegetative nervous system and the function of viscera. Bioinformation acts to offset

negative information and induce a new regenerative process. The presence of bioinformation in Energy products is essential – compared to other products of similar nature the effects of Energy products are several times higher.

Interesting findings about colloid minerals:

Sodium – a driving force of all vital processes in the body, it supports the increase of overall activity and together with potassium regulates water balance in the body. Potassium furthermore helps to control heart function and transmission of nervous impulses.

Calcium – it is important for the formation of strong bones, muscles and teeth. It eliminates muscular spasms. It helps to control heart function and transmission of nervous impulses.

Phosphorus – it adds strength and energy, it is an important component of bones.

Chlorine – it regulates the ratio of acids and alkali in blood.

Magnesium – it has anti-stress, anti-toxic, anti-allergic, and anti-inflammatory effects, it regulates muscular and nervous balance and is important for the proper function of the immune system. The magnesium requirement is increased especially in diabetic patients, sportsmen, women who take hormonal contraception, pregnant women, people living a stressful lifestyle, and practically any patient, as the lack of magnesium worsens almost

any disease. It is important for the prevention of atherosclerosis and cardiovascular diseases.

Sulphur – it influences healthy complexion, skin and nails. It is responsible for proper supply of oxygen to the brain.

Zinc – it has positive effects on the immune and nervous systems and skin. Possible signs suggesting zinc insufficiency are the loss of taste and sense of smell. It activates insulin.

Iodine – it is an important element for the proper function of the thyroid gland, it provides energy and supports growth.

Selenium – it is an important enhancement for the immune system. Together with zinc and vitamin E it works as an important antioxidant. It facilitates mental as well as physical performance.

Iron – it is necessary for the production of red blood pigment – haemoglobin. It is involved in the transfer of oxygen from lungs to the entire body. It is an important activator of enzymes of the energy metabolism.

Copper – it is essential for bone growth and for the formation of connective tissue, it improves the absorption of iron from food. Its deficit causes a decrease of skin and tissue elasticity and also the formation of lines and wrinkles, grey hair, anaemia or osteoporosis.

Manganese – it plays an important role in the production of insulin, it supports immunity and helps skeletal growth.

Chromium and vanadium – their insufficiency is

demonstrated as a constant yearning for something sweet, because of low blood sugar levels. If this condition lasts long, it may later change to diabetes. Chromium is necessary in the utilisation of blood sugar (glucose) for the production of energy. Vanadium is an essential material affecting fat metabolism. It is significantly involved in the protection of the body from cardiovascular diseases.

Cobalt – it is part of vitamin B₁₂ and it has its role in the synthesis of thyroid hormones and in haematogenesis.

Molybdenum – it is used as protection from anaemia, it influences male potency and works as an activator of enzymes involved in the metabolism of sugars, lipids, and iron.

Fluorine – sufficient supply of fluorine is important to reduce the formation of dental caries and to ensure proper growth.

Silicon – it ensures firm and elastic skin, hair, nails, and cartilages. It helps in wound healing.

Boron – it influences the calcium metabolism and its proper supply is necessary in the prevention of osteoporosis. It helps to maintain the correct levels of oestrogen in women and of testosterone in men.

Regenerative process and dosing:

Children aged 3–12 years: 15 drops per day

Children from 12 years – adults: 30 drops per day.

Mix the daily dose of colloid minerals in a glass of water and drink ideally after a meal. Shake before use, potential sediment is not a product defect. Suitable for diabetic patients.

After three weeks of usage it is recommended to discontinue the application for one week. Do not exceed the recommended daily dose.

Warning:

Dietary supplements are not intended to substitute varied diet. The product is not intended for children under 3 years of age. Store out of reach of children.

Storage method:

Store closed at 10–25°C in a dry place.

Authorisation of the Ministry of Health of the Czech Republic:

HEM–350–11.5.99/17694

The product has been manufactured in compliance with the principles of organic agriculture and Fair Trade. The product has been developed, manufactured, and controlled in compliance with the requirements of ISO 9001:2000 standard.



Introduction to the topic

Minerals form approx. 4% of the body weight of people. Although minerals, trace elements and vitamins are not energy carriers, they are an essential part of our diet. They serve for the formation of tissues in the body, for the regulation of metabolic processes and they are also involved in the process of nervous impulse transmission. Minerals also have an important role in decelerating atherosclerotic changes in vessels and influence cholesterol and blood sugar levels. As our body is not able to produce minerals itself, we are dependent on their intake through food and water. Although most of the minerals are contained in sufficient quantities in proper diet, the common food of today, full of fats, sugars and salt results in a deficiency of certain mineral substances. On the other hand, when using some pharmaceutical products, overdose or imbalance of the received minerals may occur. This issue is eliminated when taking Fytomineral, as mineral substances in their colloid state are non-toxic and no overdose or imbalance may occur.

In the short term, the body is able to maintain the balance of mineral substances on its own. Yet an insufficiency, excess as well as an incorrect ratio of minerals may cause health problems. If the intake of minerals is low in the long term, the organism uses its reserves stored in muscles, liver, and bones. The most significant in terms of nutritional defects is the deficit of calcium (Ca), iron (Fe) and iodine (I). In the last few years, emphasis has been also

placed on adequate magnesium (Mg) and zinc (Zn) supplementation. It is interesting that a mineral overdose has much more dangerous consequences than the administration of excess quantities of vitamins.

Most important mineral substances of the human body:

The most important minerals (also called macroelements) of the human body include: sodium (Na), potassium (K), calcium (Ca), phosphorus (P), chlorine (Cl), magnesium (Mg), sulphur (S).

Trace elements:

Trace elements are those elements whose concentrations in tissues are lower than 50mg/kg. In human tissues these are: zinc (Zn), iodine (I), selenium (Se), iron (Fe), copper (Cu), manganese (Mn), chromium (Cr), cobalt (Co), molybdenum (Mo), fluorine (F), lithium (Li), nickel (Ni), tin (Sn), vanadium (V), aluminium (Al), arsenic (As), cadmium (Cd), lead (Pb) and mercury (Hg). The first ten (Zn, I, Se, Fe, Cu, Mn, Cr, Co, Mo, F) are, by the classification of nutritional definition, considered essential, i.e. necessary for life. For other elements (Li, Ni, Sn, Si, V, B) it remains unclear whether they are essential for man or not. They are, however, involved in physiological processes in the body. Aluminium, arsenic, cadmium, lead and mercury are toxic trace elements whose biological function is not known, but they do occur naturally in the human body.

Differences between colloid organic elements from plants and inorganic elements:

Inorganic minerals:

These are practically nothing else but a crushed rock. Their absorption in man and in animals is very low: only 5–10%. After the 35th year of age it drops even further down to 3–5%. For instance, from one tablet containing 250mg calcium and 750mg lactose the body obtains, if the rate of absorption is 5%, mere 12.5mg of calcium. In order to meet the daily dose, we would have to swallow 80 such tablets. Excess usage may result in the depositing of inorganic minerals in tissues, causing serious disorders, such as atherosclerosis, heart problems, kidney stones, and joint disorders.

Chelate minerals:

Minerals modified to their chelate forms are better absorbable than the inorganic forms of minerals. The chelation principle of mineral substances is a chemical process by which minerals, usually trace elements (iron, cobalt, copper, zinc, manganese), are combined with a mixture of amino acids. In other words, due to chelation, mineral substances become better available for the body, the ability of their absorption is increased as well as their effect in biochemical functions of the body. The chelation method was originally an invention of veterinary medicine. Afterwards, minerals in their chelate

forms gradually began to be used also for mineral supplementation in man.

Colloid minerals:

Colloid minerals represent the most perfect form of minerals. Their availability is as much as 98% with zero toxicity. When someone drinks a solution of an inorganic mineral, he or she may poison himself or herself. In their colloid form, however, minerals are non-toxic and there is no jeopardy of overdosage. Dr. Poppa, a well-known German biophysicist has demonstrated that plant derivatives of colloid minerals are non-toxic and that they increase the performance of cellular life energy. For his invention he was nominated for the Nobel Prize. Another important work in the field of colloid chemistry, “Amazing Characteristics of Colloidal Minerals”, was published and presented to medicine several years ago by Dr. Joel D. Wallach, who was, in 1991, also nominated for Nobel Prize.

Laboratory tests suggest that colloid minerals form bounds with heavy metals, such as mercury, lead and others. This means that colloid minerals help to eliminate the unsuitable forms of metals from the body.

The maximum rate of absorption and biological availability of these minerals is given by their natural (plant) origin as well as by the microscopic colloid form with very low surface charge. Colloid minerals hence induce and maintain electric balance in the human body. They are necessary for a huge number

of biochemical processes, they are involved in enzyme production, they help to regulate hormonal activity and increase vitamin absorption (e.g. the body is not able to absorb vitamin E without colloid zinc). Of their other effects, their influence on the regulation of metabolism of human cells and subsequently detoxification of the body should be also mentioned.

Speaking about the effects of colloid minerals we should not omit their major role in the synthesis of DNA, which is the corner stone in cell renewal and multiplication. As old cells are constantly replaced by new ones, sufficient quantities of trace elements are necessary for the proper function of all cellular processes. DNA is a vital substance which in its structure codes the program of cells and assigns it to them, thus predetermining the development and characteristics of the entire organism. If a cell suffers from mineral insufficiency, it may result in incorrect programming and progress of cellular processes. The cell hence may be active, but not fulfilling its function properly. A minute amount of incorrectly working cells in the body does not matter. But if our organism is constantly unable to produce healthy cells, various diseases develop and premature ageing and uncontrolled and inaccurate cellular division occurs, which may result even in tumorous processes. Colloid minerals are also significantly involved in improving the condition of diabetes which is at present considered a worldwide issue. International Diabetes Federation (IDF) forecasts that by 2025

this insidious disease may affect 9.8% of the entire adult population. Diabetes is associated with a range of complications, such as eye disorders, kidney failure, cardiovascular diseases or amputations as a consequence of inadequate vascular supply to the extremities. Since 1957 the veterinary medicine has known the possibility how to treat diabetes and how to prevent it using two trace elements. These are chromium and vanadium. Their deficit demonstrates as a constant yearning for something sweet because of low blood sugar levels. Research from the Vancouver University in British Columbia suggests that vanadium itself is able to replace the need for insulin administration gradually in the course of 4–6 months.

Fytomineral composition

in mg/l (ppm):

product documentation – fytomineral

Element	Contents in mg/l (ppm)
Magnesium (Mg)	2000
Aluminium (Al)	870
Potassium (K)	600
Calcium (Ca)	300
Iron (Fe)	300
Sulphur (S)	300
Sodium (Na)	300
Chlorine (Cl)	60
Phosphorus (P)	30
Manganese (Mn)	20
Silicon (Si)	10
Praseodymium (Pr)	<10
Neodymium (Nd)	<10
Zinc (Zn)	6
Lithium (Li)	5
Tellurium (Te)	<5
Wolfram (W)	<5
Thorium (Th)	<5
Cerium (Ce)	<5
Strontium (Sr)	4
Copper (Cu)	4

Rubidium (Rb)	4
Nickel (Ni)	2
Gallium (Ga)	1
Molybdenum (Mo)	1
Hafnium (Hf)	1
Europium (Eu)	1
Terbium (Tb)	1
Cobalt (Co)	1
Niobium (Nb)	1
Iridium (Ir)	1
Dysprosium (Dy)	1
Scandium (Sc)	1
Zirconium (Zr)	1
Samarium (Sm)	1
Erbium (Er)	1
Chromium (Cr)	0,8
Boron (B)	0,8
Bismuth (Bi)	0,5
Palladium (Pd)	0,5
Rhodium (Rh)	0,5
Lanthanum (La)	0,5
Germanium (Ge)	0,5

Vanadium (V)	0,5
Platinum (Pt)	0,5
Ruthenium (Ru)	0,5
Gadolinium (Gd)	0,5
Indium (In)	0,5
Osmium (Os)	0,5
Rhenium (Re)	0,5
Holmium (Ho)	0,5
Ytterbium (Yb)	0,5
Antimony (Sb)	0,3
Gold (Au)	0,3
Selenium (Se)	0,2
Yttrium (Y)	0,1
Lutetium (Lu)	0,1
Beryllium (Be)	0,1
Titanium (Ti)	0,1
Cesium (Cs)	0,05
Thallium (Th)	0,05
Barium (Ba)	0,02

Note: Fytomineral is a 100% natural product and the contents of individual elements may fluctuate

Importance of elements vital for the body

SODIUM

Sodium is the basis of electrolyte in which all vital signs of cells are going on. This means that it is the driving force of all essential processes in the body and that it supports a general increase in activity. Together with potassium it regulates water balance in the body; it is involved in the maintenance of homeostasis in blood. It is necessary for nervous and muscular activities as it maintains muscular excitability and cellular membrane permeability. Its consumption significantly grows with increased physical strain. The lack of sodium as well as its excess quantity in the body cause many a problem. With regard to the current diet and artificial substances contained in foodstuffs (sodium nitrite, sodium glutamate) the intake of sodium is on average 10 times higher than its consumption in the body. That is why it is important to be careful about the intake of sodium from food, particularly in children who are not able to eliminate it from the body like adults are. The content of sodium in the body is controlled primarily by the kidneys, 90% of received sodium is excreted in urine.

Occurrence: normal kitchen salt (sodium chloride – NaCl), sausages and smoked meat products (in the form of sodium nitrite), sodium glutamate (a substance used to enhance the taste of many commercial ready-to-cook and -eat products).

Insufficiency: Sodium insufficiency is rare. The cause is particularly excess sweating. It may result in low blood pressure, dehydration, mental depressions, and muscular weakness, even spasms.

Excess: Excess sodium causes retention of liquids and development of oedema, high blood pressure, and heart and kidney failure. Moreover, excess amounts of salt, and hence also of sodium may increase the elimination of calcium and thus increase the risk of osteoporosis.

POTASSIUM

Potassium is the main mineral substance which is found inside human cells. Intracellular potassium occurs either as a free ion, or in a bound form. It balances the effects of excess intake of sodium, such as oedema and high blood pressure. It is essential for the transmission of nervous impulses and for the proper function of muscles. It is also involved in the metabolism of sugars, regulation of acidobasic balance and osmotic pressure in the body and it is important for the metabolism of oxygen in brain. Proper potassium metabolism in the body is necessary for heart function, to prevent a disruption of the regular heart rate. Potassium must not be used in kidney disorders, in increased potassium blood level exceeding 5mmol/l and in vomiting. Caution has to be exercised also when potassium is administered to diabetic patients.

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High potassium intake reduces the efficacy of anticoagulant medicines.

Occurrence: Dried figs, avocado, seeds, nuts, bananas, cereal sprouts, apricots, potatoes, legumes, parsley, celeriac, and other root vegetables.

Insufficiency: Potassium insufficiency in the body has many various symptoms, such as neuromuscular activity disorders (fatigue, muscle weakness, confusion), gastrointestinal tract disorders, kidney disorders. A rather frequent cause of potassium insufficiency is also the concurrent drop in magnesium levels. If magnesium is supplemented to its physiological level, potassium levels correct themselves automatically.

Excess: Excess intake has diuretic effects (kidneys increase the volume of excreted urine). People with a kidney disease, however, are not able to eliminate excess potassium, and should therefore refrain from excessive intake of this element. Excess potassium may, furthermore, cause heart rhythm disorders, or even heart failure and muscular paralysis.

CALCIUM

Calcium is one of the essential minerals. It represents 1.5–2% of our body weight. It is necessary particularly for the mineralisation of bones and teeth, where as much as 99% of the element may be

found. In addition it is important for blood clotting, and through its influence on membrane and capillary permeability it is important for the regulation of liquids in the body. It is also necessary for the function of many enzymes, for muscular contractions, nerve excitation, regulation of cellular growth, excretion of insulin and elimination mechanisms in the kidney. An adequate intake of calcium is important mainly for infants and children, in pregnant women and post-menopausal women.

The absorption of calcium from bowels and its integration in bones is much supported by vitamin D. Besides this vitamin, also some hormones are involved in the regulation of calcium blood plasma concentrations (parathormone, calcitonin). The amount of calcium in the body is, however, naturally also dependent on its intake in food.

In the processing of dairy products which are considered a major source of calcium, calcium degradation occurs. The processing of milk by heat (calcium content is higher in goat milk than in cow milk) destroys certain enzymes and the rate of absorption of calcium hence drops to 20–25%. Moreover, milk does not contain much magnesium which is also essential for bone mineralisation. This implies that the main cause of osteoporosis is not an insufficient consumption of milk. It is rather conducted by excess consumption of sugar (its processing in the body requires lots of calcium which the body frequently takes from the bones) or of refreshing drinks which contain stabilisers; these form non-absorbable

complexes with calcium in the bowels. A major amount of calcium is also contained in hard cheese. In the manufacture of processed cheese, on the contrary, non-absorbable complexes are formed from which calcium cannot be retrieved. Another problem with calcium absorption arises in the consumption of spinach and rhubarb, because of the presence of oxalic acid, which prevents its proper absorption in the body. Human as well as animal organism is able to absorb calcium only in the presence of phosphorus, magnesium and other trace elements.

Occurrence: Milk and dairy products (hard cheeses), sardines, soya, green leaf vegetables, sesame seeds, beans, almonds, egg yolk.

Insufficiency: An insufficient intake of calcium demonstrates as bone softening (osteoporosis), increased occurrence of dental caries, pathological bleeding, swelled mucosa of various organs (incl. vocal chords), itchy skin and other allergic reactions. Its insufficiency also causes muscular spasms, so called tetany. Tetanic spasms are induced by a drop of ionised calcium plasma concentrations. Calcium insufficiency may be also the consequence of excessive intake of sodium (i.e. primarily kitchen salt), or of phosphorus (e.g. in excess consumption of flavoured fizzy drinks and proteins, particularly meat), as well as of its excessive elimination through kidneys or due to inadequate absorption, for instance in bowel damage or lack of vitamin D.

Excess: Severe damage to the body by calcium overdose is rare at present. It may happen, however, when excessive quantities of certain pharmaceutical products containing calcium are used or after an overdosage of products which increase calcium blood levels. Symptoms of excess calcium in the organism include a drop in muscle tone, excessive sweating, constipation and nausea-like digestive problems. Atherosclerosis may develop as a consequence of vessel wall calcification. Small vessels are also affected.

PHOSPHORUS

Phosphorus is involved in the formation of bones and teeth. It is necessary for the release of energy in cells. Phosphorus compounds (particularly phosphates) are the major component of tissues of all plant and animal cells. Phosphorus also takes part in enzymatic activity. Phosphates (phosphorus salts) are added to a whole range of foodstuffs, such as Coca-Cola to regulate the acidity of the beverage, to processed cheese, meat as well as frozen poultry, because they retain humidity and thus soften meat. Nevertheless, phosphorus in this form acts as a toxin rather than as an element necessary for one's health.

The absorption of phosphorus is much influenced by calcium, which influences its bioavailability. Vitamin D increases the absorption of phosphorus independently of the absorption of calcium. Phosphorus reduces the absorption of iron in the body.

Importance of elements vital for the body

Occurrence: Proteins of plant and animal origin, dark meat, poultry, fish, seafood, nuts, seeds, wholegrain cereals, milk, egg yolk.

Insufficiency: It occurs only rarely. Sometimes a phosphorus insufficiency arises due to a long-term use of antacids (medicines reducing stomach acidity) or overdosage with pharmaceutical calcium. Rickets may sometimes develop.

Excess: Too much phosphorus adversely affects the absorption of calcium – it increases the risk of osteoporosis and suppresses the absorption of magnesium and iron.

CHLORINE

It is functionally very important for the maintenance of normal osmotic pressure in the body and for maintaining the balance of liquids and water contents in the body. In blood plasma it ensures blood viscosity together with sodium and potassium. Its highest concentrations are in the cerebrospinal fluid and in digestive gastric juices in the form of hydrochloric acid. The body receives it mainly from food, but it is necessary to avoid its excessive usage, namely during pregnancy and breastfeeding, in people with high blood pressure, cardiovascular diseases, and kidney disorders. It is eliminated by urine.

Occurrence: Kitchen salt.

Insufficiency: It does not occur in normal diet. An excess loss of chlorides may occur similarly as in sodium by sweating, diarrhoea and vomiting. Potential signs are hair loss and nail defects.

Excess: Does not occur.

MAGNESIUM

Magnesium is definitely one of the most widespread and most essential elements. It has an important role in the energy metabolism in the organism, as it is a vital component of a number of enzymes, and so is involved in practically any biochemical and physiological process in the body.

It is absolutely indispensable for the metabolism of nucleic acids, and hence also for the transfer of genetic information. It has anti-stress, anti-toxic, anti-allergic and anti-inflammatory effects; it controls muscular and nervous balance, activates enzymes and is essential for the proper function of the immune system. As a catalyst, it is involved in a number of other chemical processes, for instance it influences the blood coagulation process, intestinal, gall bladder or urinary bladder activity. It is necessary for the transmission of nervous impulses, and muscular contractions. Together with calcium it plays a major role in respect of the heart function and blood circulation. Current research has confirmed its

essential task in the prevention of cardiovascular diseases, including atherosclerosis, myocardial infarction, hypertension, and cardiac arrhythmias. The content of magnesium in the body of an adult individual ranges from 20 to 30 grams, with approx. one half to two thirds of this amount being found in bones and teeth. The remaining magnesium reserves are deposited in muscles, but also in the liver, kidneys and the nervous tissue.

The main area of magnesium absorption is the small intestine. Its absorption from colon is restricted, mainly in persons with a functional disorder of the small intestine. Of the magnesium which we receive through food, only some 25% are absorbed in adults. In this respect there is no difference between men and women, and absorption does not alter significantly with age, either.

Elimination through urine is the main way how the body loses magnesium. Losses through the skin are not inconsiderable, either; they depend on the external temperature and physical strain. Losses of magnesium by skin are relevant especially in sportsmen and manually working individuals. Magnesium requirement is increased particularly in diabetic patients, sportsmen, women using hormonal contraception, pregnant women, people who use alcohol, people who lead a stressful lifestyle, and practically all patients as the insufficiency of magnesium deteriorates the condition of almost all diseases.

Moreover, for the body to accept magnesium, it is

necessary to administer it together with calcium as well as vitamin E, vitamin C and vitamins B₂ and B₆.

Occurrence: wholegrain cereals, legumes, nuts, sesame seeds, green leaf vegetables (magnesium is part of the chlorophyll molecule), cocoa, bananas, almonds, figs, poppy seeds, hazelnuts, oatmeal, potatoes.

Insufficiency: Magnesium insufficiency has many symptoms – mental depressions, dizziness, muscle weakness, spasms (especially in lower extremities), increased mental and physical fatigue, heart rhythm disorders, hair loss and breaking nails. Magnesium insufficiency has been observed in a number of diseases, e.g. in patients with hypertension, who are treated with diuretics (“water pills”), in alcoholics, and in patients with liver cirrhosis.

Excess: Does not occur.

SULPHUR

Sulphur is a component of two essential amino acids (cysteine and methionine) and one non-essential amino acid (cystine). It may be found in all cells of the human body, and occurs in higher concentrations in the skin, nails and hair. This implies that sulphur influences the health of the complexion, skin, and nails, and is also responsible for proper supply of oxygen to the brain. In its pure form sulphur acts as an

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antifungal and antibacterial agent (sulphuring of vine barrels, treatment of skin diseases – acne).

Occurrence: dairy products, eggs, legumes, nuts, meat.

Insufficiency: Not known.

Excess: Sulphites which are used to preserve the colour of dried food (apricots, raisins), may induce allergic reaction in allergic individuals.

ZINC

Zinc is the most common intracellular trace element; it has a number of catalytic, structural and regulatory functions. Zinc is a component of biomembranes and is essential for RNA, DNA and ribosome stabilisation. It controls metabolism and the production of certain enzymes; it positively influences the immune and nervous system and the skin. Scientists have shown that zinc activates the production of lymphocytes. Zinc is part of the enzyme superoxididismutase, which is involved in ensuring the antioxidative protection of the organism. Its detoxifying effects are also of importance: it reduces the toxic effects of lead and cadmium. It is a co-factor of many a metalloenzyme and is involved in proteosynthesis. In viral and bacterial infections, zinc acts in synergy with vitamin C. It forms part of over 200 enzymes. It helps to maintain stable blood sugar levels

and is involved in the production of the hormone testosterone.

Occurrence: Oysters, crustaceans, molluscs, dark meat, peanuts, sunflower and pumpkin seeds, coca, onions, eggs.

Insufficiency: Zinc insufficiency is quite common in the population. It demonstrates as a drop in appetite, developmental defects and decelerated growth, as well as skin problems, night blindness, reduced capacity to heal wounds, hair loss, and reduced function of sexual glands. A long-term stress also contributes to zinc insufficiency. Functional disorders of substance elimination by kidneys and hormonal disorders may also adversely affect the amounts of zinc in the body.

Excess: Does not occur in normal diet. It may appear only in excessive intake from dietary supplements. Acute intoxication causes diarrhoea, vomiting, nausea and muscle pain.

IODINE

Iodine is an element responsible for the proper function of the thyroid gland, which produces hormones necessary for the entire body. Thyroid hormones are essential for the development and growth of the organism and for proper metabolism.

Occurrence: Sea algae, seafood, salt.

Insufficiency: The content of iodine in soil in the Czech Republic is very low and iodine intake through food is therefore insufficient. Approx. 1/3 of the Czech population is expected to suffer from iodine deficit. Its insufficiency manifests as an enlargement of the thyroid gland (goiter), chills, suppressed mental and physical activity, dry and rough skin, increasing body weight, tendency to depressions. A goiter may occur not only due to a lack of iodine in diet, but also as a consequence of excessive contents of strumigens in foodstuffs, which block the absorption of iodine from food (e.g. cabbages). Iodine insufficiency may also present as sexual development and fertility disorders and in miscarriages.

Excess: Practically no cases of health problems caused by excess iodine have been reported. Nonetheless, in high doses of iodine, hyperfunction of the thyroid gland (so called hyperthyroidism) may occur. Its symptoms are hyperactivity, insomnia, hot flushes, accelerated heartbeat, and loss of weight.

SELENIUM

Selenium positively influences the effects of vitamin E. Selenium as well as vitamin E are very important antioxidants which slow down the ageing of cells and enhance the immunity of the body to tumorous diseases. Moreover, both have positive effects on male and female

fertility. Another function of selenium is the prevention of blood clot formation. Selenium increases the function of the immune system and resistance of the body to viral and bacterial infections. Selenium is necessary for the production of the active form of the thyroid hormone. It is also used as the prevention of myocardial infarction, arterial sclerosis, and development of malign tumours. Selenium also protects the organism from nervous problems.

Occurrence: Sea fish (although selenium from sea fish is poorly absorbable), garlic, onions, chives, offal, nuts.

Insufficiency: It is rare and it demonstrates as stopped growth, sexual retardation, and reduced fertility. Selenium levels are low in smokers and chronic alcoholics who also suffer from lack of vitamin E and magnesium. Other symptoms include muscular pain, wasted muscles and reduced mental and physical performance.

Excess: Selenium intoxication is rare in man. Its signs include hair loss, skin depigmentation, fatigue as well as vomiting and increased nervous excitation.

IRON

The physiological function of iron in the body is truly major. Iron is involved in a whole range of biochemical reactions, incl. for example the transport of oxygen. It is therefore an element vital for cellular

Importance of elements vital for the body

respiration and electron transfer. Iron is also involved in the oxidation and reduction metabolism of the body. Absorption of iron from food of plant origin is preconditioned by sufficient supplies of vitamin C. Absorption is reduced by oxalates contained e.g. in spinach and rhubarb. Iron and vitamin E degrade each other; it is therefore necessary to maintain an eight-hour interval between the use of these two substances. Many enzymes contain iron, for example enzymes involved in the transformation of beta-carotene to the active form of vitamin A or enzymes necessary for the synthesis of DNA, RNA and collagen.

Occurrence: Offal, lean meat, legumes, sardines, egg yolk, green leaf vegetables.

Insufficiency: Iron insufficiency causes anaemia, fatigue and physical weakness. It is also the cause of breaking nails, digestive problems, and impaired thermoregulation of the body. Insufficient amounts of iron in the organism reduce the immunity of the body.

Excess: Siderosis, which is an iron overload manifested by greyish skin and gastric and hepatic disorders, is rare. It may be a consequence of frequent blood transfusions and is usually associated also with a long-term regular consumption of alcoholic drinks fermented in iron vessels. Excess iron may accumulate in the body during haemochromatosis, which is a genetically

conditioned increased iron absorbability from the gastrointestinal tract and its gradual depositing in tissues. The symptoms of haemochromatosis include fatigue, changes in the colour of the skin, joint and cardiac disorders and liver cirrhosis.

COPPER

It is essential for the proper function of each cell of the human body. It is widely present in biological tissues where it exists in the form of organic complexes, mostly metalloproteins and metalloenzymes. Copper has an important role in the process of haemoglobin production and absorption of vitamin C. Copper adjusts the overall condition of the body and supports leukocytes or white blood cells which are responsible for the immunity of the organism. It is a component of essential enzymes, especially for the production of the red blood pigment haemoglobin, and it is important for the maturing of red blood cells. Copper forms part of tissues where it is bound to proteins and enzymes. It plays a major role in the growth of bones and connective tissue formation; it enhances the absorption of iron from food. Copper is a component of a number of enzymes, such as superoxidismutase, which ensure protection from free radicals.

Occurrence: green vegetables, offal, meat, crustaceans and molluscs, nuts, seeds, mushrooms, cocoa, egg yolk.

Insufficiency: Copper deficit is not much common in man. Its symptoms include growth disorders, and bone, hair and nail formation disorders. Copper insufficiency may result in anaemia due to lack of iron, as the human body can avail of its iron reserves for the production of red blood cells only with the help of copper. Zinc insufficiency concurrently induces also copper deficit. It is the cause of greying hair, anaemia and osteoporosis.

Excess: Toxic signs of excessive intake of copper appear only when the intake of copper is increased 200–500fold of the recommended amount. It manifests as liver damage (liver cirrhosis), accumulation of copper in the central nervous system, and kidney damage.

MANGANESE

Manganese has its role in the work of essential metabolic enzymes, bone mineralisation, and it is important for the proper function of the nervous system. It is involved in the production of thyroid hormones and sexual hormones and also plays a major role in the production of insulin and cholesterol.

Occurrence: Nuts, cereals, wholegrain rice, legumes, green leaf vegetables, black tea.

Insufficiency: Occurs only rarely. It induces skeletal development disorders, which are caused primarily by impaired bone mineralisation. Magnesium insufficiency also manifests in the

sphere of reproduction (impaired ovulation, testicular degeneration). It has a number of non-specific symptoms; these include deteriorated hearing, tinnitus, loss of weight, fatigue, loss of appetite, agitation, dizziness, and possibly also dry and cracked skin.

Excess: Overload by inhalation intoxication results in central nervous system disorders.

CHROMIUM

Of all trace elements, chromium is the most difficult to obtain from food and to absorb in the body. Chromium is eliminated from the body in a rather high rate, by urine. Its role in the organism is to enhance the effects of insulin. It means that it facilitates the absorption of glucose by cells. Apart from regulation of blood sugar levels, it is also involved in adjusting blood fat and cholesterol levels. A sufficient intake of chromium is especially important in diabetic diet.

Occurrence: Dark meat, liver, sea food, wholegrain cereals, potatoes, nuts, yeast.

Insufficiency: Insufficiency demonstrates by reduced glucose tolerance with increased glycaemia and retarded growth. Blood fat levels may also increase.

Excess: Excessive amounts may cause kidney damage.

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COBALT

Cobalt in the human body occurs as part of vitamin B₁₂. For vitamin B₁₂ to be effective, cobalt is necessary as it allows for the activation of a number of enzymes by this vitamin. Cobalt plays a major role in the synthesis of thyroid hormones, where it is involved in the uptake of iodine. Its deficit as well as excess result in the formation of goiter. Cobalt has its task also in the process of haematogenesis, which is given by its presence in the structure of vitamin B₁₂.

Occurrence: Vegetables, cereals (especially wholegrain), offal, beer yeast and wine yeast.

Insufficiency: Cobalt insufficiency is rare. Its symptoms include anaemia, loss of weight, increased fatigue and goiter.

Excess: Diseases caused by excess cobalt in food are practically non-existent. Acute intoxication damages the pancreas.

MOLYBDENUM

Molybdenum represents a trace element indispensable for the human body, as it is a component of several important body enzymes, besides others of the enzyme responsible for the absorption of iron in the organism. It acts as the activator of enzymes involved in the metabolism of

sugars, lipids, and iron. It is used as the protection against anaemia and also influences male potency. Moreover, it is used in the treatment of young children suffering from epileptic attacks, mental retardation and eye disorders, because these symptoms are caused by a congenital disorder of the complex containing molybdenum. This treatment must be carried out under medical supervision only!

Occurrence: Vegetables, cereals, legumes, offal, milk and dairy products, fruit and vegetables.

Insufficiency: Molybdenum insufficiency occurs only rarely. It may demonstrate as irregular heart rate and insufficient elimination of uric acid from the body with subsequent development of gout; CNS disorders may also appear.

Excess: Molybdenum toxicity is very low; in some cases increased blood levels of uric acid have been reported which theoretically may induce a joint disease called gout. Gastric discomfort was only very rarely seen in people using products containing molybdenum. High intake of molybdenum is suspect of reducing copper and silicon blood levels. The daily dose of molybdenum should not exceed the limit of 2mg.

FLUORINE

Fluorine in the body is present in bones and teeth. The effect of fluoride in tooth enamel cannot

be substituted by any other trace element. The fluorided tooth enamel is more resistant to the acid environment in the buccal cavity, and hence also to the development of dental caries. Depending on its concentration, fluoride influences the activity of soft tissue enzymes. It also demonstrates a mild antimicrobial effect on the microflora of the buccal cavity and interferes with the metabolism of bacteria in the buccal cavity and stimulates bone cells.

Occurrence: Toothpastes, drinking water, tea (tea plant very well absorbs fluorides from the soil, so the intake of fluorine in people who drink lots of tea, especially when made of fluorided water, may be rather high).

Insufficiency: It manifests as increased development of dental caries, and impaired depositing of calcium in bones. It may also cause retarded growth.

Excess: Excess fluorine causes fluorosis (fragile and spotted teeth), osteoporosis, muscle wasting. Brain mental functions and IQ may also be affected.

NICKEL

So far, the biochemical function of nickel in the organism of mammals has not been precisely defined. It is involved in the metabolism of folic acid and vitamin B₁₂, iron and zinc.

Occurrence: Chocolate, nuts, beans, peas.

Insufficiency: Symptoms of nickel deficit are rare – growth disorders, affected fertility.

Excess: Intake of excess nickel from food is very unlikely.

TIN

Tin is a trace element present in small quantities in normal diet. In small amounts, it is beneficial for the body. It is expected to enhance normal growth and have an important role in a number of bioelectric functions. In higher amounts, tin salts are used to combat intestinal parasites, such as pinworm, roundworm and tapeworm.

Occurrence: Dairy products, cereals, nuts. Another source of tin in human nutrition is often tin from tinned packages of food and beverages.

Insufficiency: Occurs only rarely. Unless it is of genetic origin, it demonstrates as deteriorated hearing and as hair loss in men.

Excess: Diseases caused by tin overload may occur in long-term intake of foodstuffs from tinned packages. It manifests as anaemia and functional disorder of the pancreas. Nevertheless, tin is an element with a rather low toxicity and diseases develop only in doses ranging in hundreds milligrams per person per day.

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SILICON

Silicon is an essential element with very low toxicity. It is involved in the formation of bones by influencing the composition of cartilages, in particular their calcification. It is concentrated in the active growth zone of young bones and in osteoblasts. It plays a major role in the formation of collagen and elastin networks and increases the production of collagen. Silicon maintains the firmness and elasticity of sinews, skin, hair, nails, vessels, fibrin and viscera where it is present. It influences the firmness of our bones, mostly because it increases calcium amounts. Silicon increases the activity of macrophages, and thus cooperates in the activation of cellular immunity.

Occurrence: Silicon is obtained from food in the form of silicates (silicon salts). These are contained mostly in mineral waters, beer, chicken skin, wholegrain food and root vegetables.

Insufficiency: Its symptoms include a significant weakening of nails, fragile bones, breaking hair and other skin problems. The cellular immunity of the body is also impaired, including antitumor immunity.

Excess: An excessive intake of silicon may result in the formation of urinary stones.

VANADIUM

Vanadium is a trace element which easily forms complexes with proteins that bind with iron in the body. Its biochemical function in man has not yet been completely described. It has a specific task as the regulator of the enzyme involved in the transfer of sodium through cellular membranes. It is important for proteins containing iron, it enhances the production of the blood pigment haemoglobin, and is also involved in the burning of sugars in the body (it simulates the effects of insulin). It has a major role in the metabolism of cholesterol, as in higher vanadium intake the synthesis of cholesterol in the body drops. It plays an important role in the formation of bones and teeth.

In persons using medicines containing iron and magnesium, vanadium decreases their absorption into the body. It also influences the distribution of chromium, copper, manganese and zinc in the organism.

Occurrence: Vegetable oils, sea products, mushrooms.

Insufficiency: Vanadium insufficiency occurs only rarely.

Excess: Due to its very low resorption in the bowels, intoxication is highly unlikely.

BORON

Boron influences the metabolism of calcium, magnesium, copper, phosphorus and vitamin D. Preliminary studies suggest that boron could influence the health of bones and sinews. It should also reduce the elimination of calcium in urine. This effect can lead to the reduction of risk of osteoporosis, but only if people have sufficient intake of magnesium. Moreover, it helps maintain the proper level of oestrogen in women and testosterone in men. It is an indispensable element in the menopause.

Occurrence: Raisins, prunes, nuts, fruit (except for citrus), vegetables and legumes – the content of boron, however, mostly differs depending on the soil where the food was grown.

Insufficiency: Insufficiency demonstrates by a reduced ability to maintain calcium in bones, which results in the development of osteoporosis, and also deteriorated brain functions and immunity disorders.

Excess: Orally taken boron has only a very low toxicity. The symptoms of acute intoxication in man include nausea, vomiting, diarrhoea, dermatitis, and lethargy.

ALUMINIUM

The physiological role of aluminium in the human organism remains unclear. Its total content in the

human body is approx. 35mg and its presence has been evidenced in all organs. The elementary form of aluminium is, on the contrary, suspect of being involved in the development of Alzheimer's disease. Trace quantities of this element are present in all living organisms. The natural content of aluminium in foodstuffs does not pose a risk to healthy population, as the intake of aluminium in this form is almost completely eliminated in urine. Some aluminium compounds are used as substances added to foods, such as raising powders, or are added to kitchen salt to prevent the clustering of salt grains.

Occurrence: In foodstuffs of plant origin the content of aluminium is higher than in foodstuffs of animal origin. Tea leaves and some herbs (basil, laurel, and thyme) have very high concentrations of aluminium. Other foods with naturally high contents of aluminium are baked unpeeled potatoes, spinach or plum juice.

Insufficiency: Not known, because aluminium is practically ever-present and its insufficiency could not be proven or even induced in experiments.

Excess: With regard to the findings of higher concentrations of aluminium in the brain of patients with Alzheimer's disease excess aluminium is expected to cause premature senile dementia as early as at the age of circa 50 years (Alzheimer's disease). The mechanism of effect, however, remains unclear, and it is only a hypothesis.

Recommended daily intake of elements

	Children	Children	Children	Men	Men	Women	Women	Women	Women
Age	1–3	4–8	9–13	14–18	over 19	14–18	over 19	Pregnant	Brest-feeding
Boron (in mg)	3–6	3–6	3–6	3–6	3–6	3–6	3–6	3–6	3–6
Tin (in mg)	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
Potassium (in mg)	1000–1600	1000–1600	1000–1600	2000	2000	2000	2000	2000	2000
Fluorine (in mg)	0,5–1,5	1–2,5	1,5–2,5	1,5–4	1,5–4	1,5–4	1,5–4	1,5–4	1,5–4
Phosphorus (in mg)	460	500	1250	1250	700	1250	700	700	700
Magnesium (in mg)	300–400	300–400	300–400	300–400	300–400	300–400	300–400	300–400	300–400
Chlorine (in mg)	400	600	750	750	750	750	750	877	979
Chromium (in µg)	20–50	30–120	50–200	50–200	50–200	50–200	50–200	50–200	50–200
Iodine (in µg)	100	120	140	200	200	200	200	230–260	230–260
Silicon (in mg)	–	–	–	–	Not determined	–	–	–	–
Manganese (in mg)	1–1,5	1,5–2	2–3	2–5	2–5	2–5	2–5	2–5	2–5
Copper (in mg)	0,7–1	1–1,5	1–2	1,5–2,5	1,5–3	1,5–2,5	1,5–3	1,5–3	1,5–3
Molybdenum (in µg)	25–50	30–75	50–150	75–250	75–250	75–250	75–250	75–250	75–250
Selenium (in µg)	10–50	15–70	15–80	20–100	20–100	20–100	20–100	20–100	20–100
Sodium (in mg)	250	400	500	500	500	500	500	569	635
Sulphur (in mg)	500–1000	500–1000	500–1000	500–1000	500–1000	500–1000	500–1000	500–1000	500–1000
Vanadium (in µg)	10	10	10	10	10	10	10	10	10
Calcium (in mg)	210–800	210–800	1300	1300	1000	1300	1000	1000	1000
Zinc (in mg)	7	10	12	12–15	12–15	12–15	12–15	15–22	15–22
Iron (in mg)	8	8	10	12–15	10–15	12–15	10–15	20–30	20–30

Product form: colloid mineral solution

Contents: 100ml

Active ingredients: 64 elements of the Mendeleyev periodic table in their natural forms

Regeneration process and dosage:

Children aged 3-12 years: 15 drops per day

From 12 years to adulthood: 30 drops per day

Mix the daily dose of colloid minerals in a glass of water and drink, ideally after a meal.

Shake before use; potential sediment is not a product defect.

Suitable for diabetic patients.

After three weeks of usage it is recommended to discontinue the product for one week.

Do not exceed the recommended daily dose.

Warning:

Dietary supplements are not intended to substitute varied diet.

The product is not intended for children under 3 years of age.

Store out of reach of children.

General evaluation

- **A unique form of colloid minerals in a purely natural form:** Fytomineral is a product with the contents of natural elements which are obtained from the remains of rainforest.
- **Absence of adverse effects:** When using colloid minerals, overdosage with mineral substances cannot occur, because the body takes from the minerals in colloid form only the needed ones and others are easily eliminated.
- Suitable for adults and children.
- **Body detoxification and regeneration:** Minerals are involved in the enzymatic activity of the body, and hence also in the detoxification and regeneration of the human organism.
- **Suitable for acute conditions as well as periods of recovery:** Fytomineral may be recommended not only to people weakened by a disease, it may be also used to increase vitality, immunity and to strengthen the body in stress, strain and fatigue.
- Hair, nail, and skin regeneration.
- **Increased availability of vitamins from food:** Supplementation with adequate body mineral levels helps the body to better absorb vitamins from food.
- **Systemic use, plus the possibility of local application in skin problems:** The combination of internal use of Fytomineral and its external healing effects on the skin may positively influence eczema and various types of rash. Fytomineral may be recommended also for the washing of problematic areas or for bathing the whole body in water enriched with colloid minerals or in combination with the Biotermal bath salt or bioinformation creams dissolved in water. Itchy skin may be calmed with undiluted Fytomineral.
- May be combined with a whole range of Energy products.

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