

**External ID**

Name	Date of Birth	Female	Order ID	
First Name	Sex		Order Date	18.02.2020
Sampling Date	Validation Date	Findings Status		<b>Final Report</b>
Sample Material	Validation on	Findings Date		24.02.2020

Test	Result	Unit	Standard Range	Previous Result
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**Orthomolecular and Mitochondrial Medicine**

**Antioxidants Profile**

**Vitamins**

β-Carotene	<b>1382,2</b>	ng/ml	258 - 1300		S
Vitamin E	<b>22,19</b>	mg/l	5 - 20		S

**Zinc/Selenium**

Zinc	<b>7,8</b>	mg/l	7,0 - 7,6		H
Selenium	<b>97,64</b>	µg/l	100 - 140		H
Zinc (corr.)	<b>7,8</b>	mg/l	7,0 - 7,6		H
Selenium (corr.)	<b>97,11</b>	µg/l	100 - 140		H

Selenium consumption in Central Europe is low in worldwide comparisons. The normal range stated here is a statistic average. It does not represent physiologically desirable limits. Maximum activity of the selenium-containing enzyme glutathione peroxidase is reached at whole-blood selenium concentrations of 140 – 160 µg/l.

preventive medical optimal range	140 - 160	
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Erythrocytes	4,37	Mio/µl	3,8 - 5,0		E
Haemoglobin	14,10	g/dl	11,6 - 15,1		E
Haematocrit	0,43	l/l	0,34 - 0,44		E

**Oxidative Stress**

Glutathione Peroxidase	67,00	U/g Hb	27,5 - 73,6		E
Superoxide Dismutase 2	<b>38,21</b>	ng/ml	> 40		S
Lipidperoxidation	5,00	µmol/l	< 200		S

Laboratory-Id N<sup>o</sup>.  
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## Micronutrients

### Minerals and Trace Elements

#### Zinc

##### **The zinc level is slightly increased.**

The micronutrient zinc is required as co-factor for more than 200 different enzymes – e.g., for:

- anti-oxidative enzymes like superoxide dismutase
- alkaline phosphatase or
- enzymes of the protein or carbohydrate metabolism

From an immunological point of view zinc:

- promotes the maturation of T-lymphocytes
- inhibits release of histamine and
- blocks the replication of some viruses, i.e., Herpes simplex viruses
- increases the phagocytosis activity of granulocytes and macrophages
- supports the activation of the complement system

In most cases slightly increased zinc levels are not problematic, nevertheless the renal functions should be checked and if required an ongoing substitution should be stopped.

#### Selenium

##### **The selenium level is reduced.**

The micronutrient selenium occurs physiologically in anti-oxidative enzymes like glutathione peroxidase and is therefore an important component of anti-oxidative therapy regime. Immunologically selenium leads to an increased release of interferon gamma and therefore to a shift of the TH1 / TH2 balance in direction of TH1. Furthermore, selenium in its preventive medical range activates cytotoxic T-cells and natural killer cells and is essential for regular function of the thyroid gland.

The cause of selenium deficiency is mostly insufficient selenium consumption with food as the soils can have low selenium contents.

Possible further causes of selenium deficiency are:

- excessive alcohol consumption
- chronic inflammatory diseases
- tumours
- heavy metal intoxication

Possible consequences of selenium deficiency are:

- hypothyreosis
- immune deficiency
- allergies
- increased oxidative stress
- cardio-myopathies
- increased tumour risk
- methaemoglobinaemia

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## Vitamins and Vitaminoids

### Vitamin E

The vitamin E concentration is outstanding. Lacking supply can therefore be excluded. This value does not indicate an overdose.

### β-Carotene

#### **β-Carotene in serum is increased.**

This is mainly caused by substitution. Carotinoids are pigments occurring in many plants. β-carotene is the most frequent and best known carotinoid. Theoretically it can be split into two vitamin A molecules (pro-vitamin A). But only a part of β-carotene is transformed to vitamin A in the human body. The rest is stored. It is very effective in the decomposition of oxygen radicals.

β-Carotene is needed for:

- skin
- mucosa
- hair
- eyes
- cell protection (cancer protection)
- growth
- bone development
- reproduction

## Endogenic Antioxidants

### Glutathione Peroxidase

#### **The glutathione peroxidase value was inconspicuous.**

Glutathione peroxidase (GPX) is an anti-oxidative effective enzyme required for the reduction of hydrogen peroxide and lipid peroxide.

The reduction of hydrogen peroxide proceeds according to following principle:

**hydrogen peroxide + reduced glutathione -> water + oxidized glutathione**

The reduction of lipid peroxides proceeds analogue to hydroxides.  
GPX depends on sufficient supply of selenium.

### Superoxide Dismutase

#### **The superoxide dismutase value is reduced.**

The superoxide dismutase 2 (SOD2) is responsible for the protection of cells against damage by reactive oxygen derivatives (ROS, oxidative stress). Among others these are developed as by-products during detoxification of xenobiotics via the glutathione-S-transferase-system. Also high physical stress leads to an increased production of reactive oxygen radicals.

With increasing age the protective mechanisms of the body become less and less efficient. This also applies for the superoxide dismutase. For this reason the cell damages increase caused by oxidative stress and ageing processes are promoted.

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Superoxide dismutase depends on sufficient supply of the trace elements zinc, copper and manganese. Therefore reduced SOD can often be optimized by giving the respective trace elements. In addition there are genetic SOD reductions, which have to be considered, if superoxide dismutase does not increase in spite of giving trace elements.

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## Therapy Recommendation

### Oral Therapy

Substance	morning	noon	evening	night
Manganese	5 mg			
Selenium		100µg		

With kind regards

Your Biovis-Diagnostik

**Attention:** The recommendations given are only advice based on the compiled findings and possible clinical information. They are exclusively addressed to the therapist/physician and are **not intended** for direct transfer to the patient. They cannot replace diagnosis and therapy of the treating therapist. The recommendations for therapy are a suggestion. The responsibility for the final selection/measure/dosage lies with the medical professional/therapist responsible for each individual case. Please also note that there may be contraindications/interactions associated with the recommended medication/nutritional supplements for pre-existing primary diseases and when taking certain medication. These must be investigated by the medical professional/therapist before starting therapy.

**To achieve a special medical purpose, the dosing recommendations for individual substances may be higher than those of EU Regulation 2016/128.**