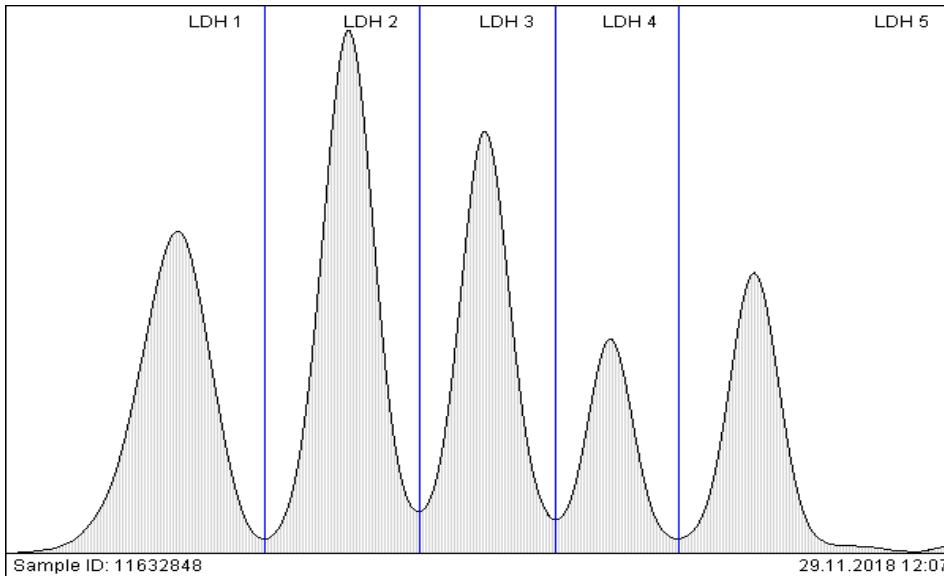


External ID

Name	Muster	Date of Birth	03.02.1969	Order ID	11632848
First Name	Muster	Sex	Female	Order Date	27.11.2018
Sampling Date	27.11.2018 00:00	Validation Date	Thomas Gugerel	Findings Status	Final Report
Sample Material	S, E, CPDA	Validation on	30.11.2018	Findings Date	03.12.2018

Test	Result	Unit	Standard Range	Previous Result
Orthomolecular and Mitochondrial Medicine				
Nitrosative Stress Profile and Mitochondria				
Mitochondrial Activity NEW				
Mitochondria total				
undamaged mitochondria	95	%	> 90	CPDA NA) FLOW
damaged mitochondria	5	%	< 10	CPDA NA) FLOW
Nitrosative Stress + Mitochondria				
Nitrotyrosine	102,5	nmol/l	< 200	E A) ELISA
LDH+LDH Isoenzymes (Mitochondrial Reflection)				
Lactate dehydrogenase (LDH)	176	U/l	< 214	S A) PHOT
LDH isoenzyme 1	23,40	%	17 - 31	S A) ELPHO
LDH isoenzyme 2	28,60	%	35 - 48	S A) ELPHO
LDH isoenzyme 3	22,40	%	15 - 29	S A) ELPHO
LDH isoenzyme 4	10,40	%	3,8 - 9,4	S A) ELPHO
LDH isoenzyme 5	15,20	%	2,6 - 10	S A) ELPHO



Vitamins				
Vitamin B12	576	pg/ml	193 - 982	S A) ECLIA
	preventive medical optimal range		600 - 982	
Coenzyme Q10	0,80	mg/l	0,88 - 1,43	S A) HPLC
	preventive medical optimal range		therapeutic optimal range > 2,5	
			1,0 - 1,43	

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STEF

Vitamins

Vitamin B12

From a preventive-medical point of view the vitamin B12 supply is sub-optimal.

Adults need 3 µg vitamin B12 a day. Vitamin is practically exclusively contained in animal food, implying that vegans a special risk group for vitamin B12 deficiency. Vitamin B12 synthesized by intestinal bacteria occurs mostly only in the colon, where it cannot be resorbed anymore.

The functions of vitamin B12 are closely connected with folic acid. Together with folic acid vitamin B12 participates in the DNA- and protein synthesis and is required for the growth of prevailing fast proliferating cells (bone marrow, mucosa, epithelia). Vitamin B12 – for the most part in co-operation with folic acid – is an important methyl group conductor, which is for example important for the decomposition of homocysteine or the synthesis of melatonin and adrenalin.

The vitamin B12 consumed with food - together with the intrinsic factor of the stomach - creates a complex in is exclusively resorbed in this form in the terminal ileum (e.g. by Crohn's disease) and therefore inevitably lead to vitamin B 12 deficiency, if there is no parenteral intake. To bond with the intrinsic factor vitamin B12 gastric acid has to release it from its bond with R-protein. This may lead to vitamin B12 deficiency – also in case of anacidity of the stomach, e.g. caused by long-term intake of proton pump inhibitors. Furthermore the resorption of vitamin B12 in the terminal ileum is disturbed by many medicaments and this has to be kept in mind all the time.

Passive resorption without intrinsic factor as channel of supply is only possible in case of very high vitamin B12 doses and is even in case of daily intake of > 1000 µg not safe.

Coenzyme Q10

The co-enzyme Q10-level indicates insufficient supply.

Co-enzyme Q10 is an endogenic substance, which is synthesized in the liver with the aid of some vitamins and the enzyme HMG-CoA-reductase. After the age of 40 the endogenic production significantly decreases.

Foods with high ubiquinone content are:

- fish
- meat
- pulses
- seeds
- nuts
- oils as well as
- broccoli and spinach.

The three most important functions of co-enzyme Q10 are

- protection of cell walls and membranes against free radicals
- protection of mitochondria against free radicals
- control of the intra-cellular energy generation from oxygen.
- essential factor of the respiratory chain (aerobic energy generation)

For this reason Q10 as radical quencher has in important protective function in case of illnesses triggered by radicals (angiopathy, tumour development, so-called aging processes etc.).

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Nitrosative Stress and Mitochondrial Medicine

Mitochondrial Activity (NEW)

Intact Mitochondria

The number of intact mitochondria is within normal range.

Damaged Mitochondria

The number of damaged mitochondria is within normal range.

Nitrotyrosine

The inconspicuous nitrotyrosine value argues against increased peroxynitrite strain and thus against existing nitrosative stress. Nevertheless follow-up analysis should be applied if the suspicion continues to exist. Also additional markers of nitrosative stress can be analysed (e.g. citrulline and/or nitrophenyl acetic acid in urine).

LDH Isoenzymes

Even a relatively slight increase of the LDH isoenzymes 4 or 5 can after excluding an increased cell degradation – mainly in liver or skeletal muscles (normal γ GT, GPT and CK) indicate a mitochondrial function disorder. In case of doubt the determination of the mitochondrial activity can quantify the function disorder.

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STEF

Therapy Recommendation

Oral Therapy

Substance **morning** **noon** **evening** **night**

Vitamin B2	20 mg			
Nicotinamide (B3)	200 mg			
N- Acetylcysteine		200 mg		
Coenzyme Q10	100 mg		100 mg	

Vitamin B12 Therapy:

1 mg hydroxy-cobalamine acetate once a month

Mitochondria Infusion:

500 ml Balanced electrolyte solution (e.g. isotonic saline solution or Ringer's lactate) with

- 100 – 200 mg thiamine
- 100 – 200 mg nicotinamide
- 100 – 200 mg dexpanthenol
- 100 – 200 mg pyridoxine
- 10 – 20 mg riboflavin
- 1 – 5 mg hydroxocobalamine

Followed by infusions with 600 – 1200 mg glutathione in 250 – 500 ml balanced electrolyte solution.
Long-term after the infusions 1mg Vitamin B12 one to three time a week subcutaneous infusions (hydroxocobalamin)

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.