bio|vis DIAGNOSTIK

Biovis Diagnostik MVZ GmbH
Dr. med. Burkhard Schütz
Wissenschaftliche Leitung
Thomas Gugerel[1]
Ärztliche Leitung
Dr. med. Herbert Schmidt[1]
Dr. med. Klaus G. Wenzel[2]

Justus-Staudt-Straße 2
65555 Limburg Offheim
[1]Facharzt für Laboratoriumsmedizin
[2]Facharzt für Nervenheilkunde

Tel.: 0 64 31 / 21 248 - 0
Fax: 0 64 31 / 21 248 - 66
E-mail: info@biovis.de
Web: www.biovis.de

DAkkS Deutsche Akkreditierungsstelle D-ML-13188-01-00

External ID

Name	**Muster**	Date of Birth	**17.07.1952**	Order ID	**11553877**
First Name	**Muster**	Sex	Male	Order Date	14.08.2018
Sampling Date	13.08.2018 09:30	Validation Date	Thomas Gugerel	Findings Status	**Final Report**
Sample Material	S, E, H	Validation on	20.08.2018	Findings Date	20.08.2018

Test	Result	Unit	Standard Range	Previous Result
Orthomolecular and Mitochondrial Medicine				
Vitamin D-Ratio				
Vitamin D3 (1.25 OH)	129	pmol/l	48 - 192	S NA) ICP-MS
Vitamin D3 (25 OH)	64,50	nmol/l	62,5 - 170	S A) CLIA
	preventive medical optimal range		75 - 200	
Vitamin-D-Ratio	**2,00**		< 1,0	NA) CALC
Wechselwirkungen im Vitamin-D-Metabolismus				
Calcium	**53,6**	mg/l	57 - 61	H A) ICP-MS
Calcium BB	59,39	mg/l	57 - 61	A) RECHN
Magnesium	**40,9**	mg/l	35 - 39	H A) ICP-MS
Magnesium BB	38,66	mg/l	35 - 39	A) RECHN
Zinc	**9,1**	mg/l	7,0 - 7,6	H A) ICP-MS
Zinc BB	**8,1**	mg/l	7,0 - 7,6	A) RECHN
Phosphor	375,28	mg/l	365 - 405	H A) ICP-MS
Small Blood Count VMA				
Erythrocytes	5,58	Mio/µl	4,0 - 5,7	E A) PARTZ
Haemoglobin	16,30	g/dl	12,6 - 17,4	E A) PHOT
Haematocrit	0,52	l/l	0,39 - 0,52	E A) RECHN
Vitamin K				
Vitamin K1 (Phyllochinon)	361,0	ng/l	50 - 900	S NA) LCMS
Vitamin K2 (Menachinon-4)	**<50**	ng/l	> 100	S NA) LCMS
			Optimal range without substitution≥ 100 ng/l Target range after substitution of 1,0-1,5 mg/d Menachinon-4: 330-1780 ng/l	
Vitamin K2 (Menachinon-7)	333,0	ng/l	> 250	S NA) LCMS
			Optimal range without substitution≥ 250 ng/l Target range after substitution of 150-200 µg/d Menachinon-7: 1100-6500 ng/l	

S=Serum, E=EDTA, H=Heparin

* cooperate analytics (R), A) accredited, NA) not accredited

Laboratory-Id N°. **11553877**
Received **14.08.2018**
Report **06.12.2018**
Last Name **Muster**
First Name **Muster**
Date of Birth **17.07.1952**

Index STEF

Biovis Diagnostik MVZ GmbH

Justus-Staudt-Str. 2
D-65555 Limburg Offheim

Phone: (+49) 6431 / 21248-0
Fax: (+49) 6431 / 21248-66
Email: info@biovis.de

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 and
- 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.

Vitamins

Vitamin D (D3)

The vitamin D3 level is **sub-optimal**.
Vitamin D 3 can be developed under UV-light irradiation in the skin from cholesterol. Therefore it is strictly speaking not a vitamin. As, however, endogenic production often is insufficient – especially during the winter – it is important to consume it with food.
The vitamin D level is subject to significant seasonal fluctuations with a minimum in February and maximum in September. As lacking vitamin D supply is very common, the vitamin D level of people older than 55 should preferably be checked in winter.

Causes of vitamin D deficiency may be:

- lacking exposure to the sun
- malabsorption (e.g. sprue or CEDs)
- liver diseases
- lack of nutritive supply (vegetarian?)
- increased demand
- therapies with anticonvulsive drugs.

Vitamin D3

- is essential for the regulation of calcium balance and bone metabolism
- has immune modulating effects (among others inflammation inhibition by reduction of TNF release) and
- promotes the regeneration of epithelial tissue.

The largest share of the endogenic vitamin 3 is developed in the forearms, therefore exposing the arms to the sun is very important.

Biovis Diagnostik MVZ GmbH

Justus-Staudt-Str. 2
D-65555 Limburg Offheim

Phone: (+49) 6431 / 21248-0
Fax: (+49) 6431 / 21248-66
Email: info@biovis.de

From a therapeutic point of view 25-OH-vitamin D3 levels between 30 – 80 ng/ml are considered to be optimal, as only then fracture and colon-carcinoma risks are reduced.
(J. Clin. Nutr. 84, 18 – 28, 2006).

Toxic effects of vitamin D are only to be expected in case of levels >80 mmol/l.

Life Extension aims at vitamin-D blood levels between 50 and 80 ng/ml. To reach these levels cholecalciferol can be substituted as follows:

Per 1 ng/ng/ml desired increase you need to consume 100 IE daily.
Example: If you aim and an increase of 20 ng/ml, 2000 IE (100 IE x 30 ng/ml) can be taken daily until the recommended control check in 2 – 3 months.

Vitamin D ratio (calcitriol / calcidiol ratio)

Calcitriol / calcidiol ratio is above normal.
The ratio of calcitriol (1,25-OH-D3) and calcidiol (25-OH-D3) is a parameter that supplies information on the functional status of the vitamin D3 system.
The ratio is ideally to be < 1,0. The dimensional factor can be ignored in the calculation. Both metabolites, calcitriol and calcidiol, influence different metabolic processes of hormone function.
Indirectly, the vitamin D ratio reflects the concentration ratio of calcium and magnesium at the moment of measurement as well as the activation status of 1alpha-hydroxylase (CYP27B1), an enzyme that transfers calcidiol into calcitriol.
Calcidiol (25-OH-D3) has a half-life period of approximately 17 days and controls the „long-term functional status“ in the system. Among others, calcidiol has anti-inflammatory and anti-carcinogenic effects. Calcitriol (1,25-OH-D3) controls the calcium release from the bone matrix and the calcium resorption in the kidney. Calcitriol has pro-inflammatory and pro-carcinogenic effects.
A vitamin D ratio of > 1,0 indicates a calcium and/or magnesium deficiency and that the system is in a state of pro-inflammatory functional condition.
Mostly, this can be verified by the high sensitive parameter CRP (hs-CRP). A hs-CRP value > 0,3 mg / dl should be taken as an indication of chronical inflammation.

Vitamine K1 and Vitamine K2

Vitamine K1 is normal.
Vitamine MK-4 is degraded.
Vitamine MK-7 is normal.

Vitamine K includes several compounds. Vitamine K1 (phylloquinone) is of plant origin and is primarily found in green vegetable, seaweed and vegetable oil. As vitamine K2 are known several menaquinones among them menaquinone-4 (MK-4) and menaquinone-7 (MK-7) that differ by the length of their side chain. Vitamine K2 is developped by bacteria in the intestinal flora or is absorbed through intake of animal products. A limited quantity can supposedly also be endogenically synthesized by phylloquinone in humans.

Optimum range and target range under substitution
While MK-7 has a 56 h half-life in the plasma MK-4 with only one hour has a considerably shorter one. Due to the short half-life fasting values of MK-4 are often low. Concentrations of above 100 ng/l give hints about an optimal supply with MK-4. Under therapy with 1,0 – 1,5 mg MK-4/day plasma concentrations of 330 – 1780 ng/l are to be expected. Target values of 1100 – 6500 ng/l are to be expected under substitution with menaquinone-7 with a dosage of 150 - 200 µg/day.

Biovis Diagnostik MVZ GmbH

Justus-Staudt-Str. 2
D-65555 Limburg Offheim

Phone: (+49) 6431 / 21248-0
Fax: (+49) 6431 / 21248-66
Email: info@biovis.de

Effects
For the development of coagulation factors vitamin K is essential. Furthermore, menaquinones-4 (vitamines K2) possess additional important effects in the body. They lead to an activation of osteocalcin with positive effect on the bone. Mineralization of the bone improves by storage of hydroxyapatite. Through the effect of osteocalcin can supposedly also be explained the positive effects on the metabolism and the anti diabetogenic effect.
Vitamine K2 indirectly inhibits the activity of osteoclasts which also contributes to an improved bone stability.

Vitamine K2 seems to have an anti inflammatory effect by decrease of IL-6 and PGE2 which are not known for K1.

Sideeffects of substitution therapy
Hypervitaminosis are not to be expected for menaquinones (as well as for phylloquinone). Especially a hypercoagulation does not occur under administration of vitamine K2. On the other hand the effects of vitamine K antagonists e.g. phenprocoumon (Marcumar) can be impaired by already relatively low dosages so that a simultaneous administration is contraindicated.

Laboratory-Id N°. **11553877**
Received **14.08.2018**
Report **06.12.2018**
Last Name **Muster**
First Name **Muster**
Date of Birth **17.07.1952**

Index STEF

Biovis Diagnostik MVZ GmbH

Justus-Staudt-Str. 2
D-65555 Limburg Offheim

Phone: (+49) 6431 / 21248-0
Fax: (+49) 6431 / 21248-66
Email: info@biovis.de

Therapy Recommendation

Oral Therapy

Substance	morning	noon	evening	night
Vitamin D	600 I.U. (substitutive minimum dose, from a therapeutic point of view possibly considerably higher dose)			

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.*