

**External ID**

Name	<b>Muster</b>	Date of Birth	<b>09.06.1978</b>	Order ID	<b>11625426</b>
First Name	<b>Muster</b>	Sex	Female	Order Date	16.11.2018
Sampling Date	16.11.2018 00:00	Validation Date	Thomas Gugerel	Findings Status	<b>Final Report</b>
Sample Material	FE	Validation on	21.11.2018	Findings Date	22.11.2018

Test	Result	Unit	Standard Range	Previous Result
------	--------	------	----------------	-----------------

**Stool Diagnostics**

**Basic Intestinal Profile**

**Quantitative Bacteriological and Mycological Stool Analysis**

**Determination of Aerobic Bacteria**

Escherichia coli	<b>2,0 x 10<sup>4</sup></b> CFU/g faeces		10 <sup>6</sup> - 10 <sup>7</sup>		FE A) KULTAZ
Escherichia coli Biovare	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Proteus species	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Klebsiella species	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Pseudomonas species	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Enterobacter species	<b>2,0 x 10<sup>4</sup></b> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Serratia species	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Hafnia species	< 1,0 x 10 <sup>4</sup> CFU/g faeces		< 1,0 x 10 <sup>4</sup>		FE A) KULTAZ
Enterococcus species	<b>&lt; 1,0 x 10<sup>4</sup></b> CFU/g faeces		10 <sup>6</sup> - 10 <sup>7</sup>		FE A) KULTAZ

**Determination of Anaerobic Bacteria**

Bifido bacteria species	1,0 x 10 <sup>9</sup> CFU/g faeces		10 <sup>9</sup> - 10 <sup>11</sup>		FE A) KULTAZ
Bacterioides species	3,0 x 10 <sup>9</sup> CFU/g faeces		10 <sup>9</sup> - 10 <sup>11</sup>		FE A) KULTAZ
Lactobacillus species	<b>&lt; 1,0 x 10<sup>4</sup></b> CFU/g faeces		10 <sup>5</sup> - 10 <sup>7</sup>		FE A) KULTAZ
Clostridium species	< 1,0 x 10 <sup>5</sup> CFU/g faeces		< 1,0 x 10 <sup>5</sup>		FE A) KULTAZ

**Mycological Stool Examination**

Candida species	< 1,0 x 10 <sup>3</sup> CFU/g faeces		< 1,0 x 10 <sup>3</sup>		FE A) KULTAZ
Candida albicans	< 1,0 x 10 <sup>3</sup> CFU/g faeces		< 1,0 x 10 <sup>3</sup>		FE A) KULTAZ
Moulds	negative		negative		FE A) KULTAZ
Geotrichum candidum	< 1,0 x 10 <sup>3</sup> CFU/g faeces		< 1,0 x 10 <sup>3</sup>		FE A) KULTAZ

**Stool Properties**

Colour	brown				FE NA) VISU
Consistency	tough pasty				FE NA) VISU
pH	6,0		5,8 - 6,5		FE NA) TESTS

**Digestive Residues**

Quantitative determination of fat	<b>7,80</b>	g/100g	< 3,5		FE NA) PHOT
Quantitative determination of nitrogen	0,80	g/100g	< 1,0		FE NA) PHOT
Quantitative determination of sugar	1,60	g/100g	< 2,5		FE NA) PHOT
Quantitative determination of water	<b>72,80</b>	g/100g	75 - 85		FE NA) PHOT

**Determination of Maldigestion**

Pancreatic elastase	431,66	µg/g	> 200		FE A) ELISA
Bile acids in stool	negative		negative		FE NA) PETIKO

Name	<b>Muster</b>	Date of Birth	<b>09.06.1978</b>	Order ID	<b>11625426</b>
First Name	<b>Muster</b>	Sex	Female	Order Date	16.11.2018

Test	Result	Unit	Standard Range	Previous Result	
<b>Detection of Malabsorption</b>					
Calprotectin	49,88	mg/l	< 50		FE A) ELISA
Alpha1-Antitrypsin	<b>56,8</b>	mg/dl	< 27,5		FE A) ELISA
<b>Special Request</b>					
Secretary IgA	<b>&gt;7500</b>	µg/ml	510 - 2040		FE A) ELISA

Laboratory-Id N<sup>o</sup>. **11625426**  
Received **16.11.2018**  
Report **06.12.2018**  
Last Name **Muster**  
First Name **Muster**  
Date of Birth **09.06.1978**

**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

Index BOSC

## Flora Status

Flora Index	<b>9</b>	Indication of a significantly altered flora situation
-------------	----------	---



### Complete evaluation of the flora findings

The indicator flora shows an increase of decomposition germs (*Enterobacter* species). Decomposition germs prevalingly metabolise protein and fat. Toxic, alkalinescent metabolites like ammonia, indole, skatole or hydrosulphide are produced. They damage the intestinal mucosa and lead to an increase of the pH-value in the large intestine to neutral or alkaline values. The inconspicuous pH-value (**6**) of Mr. / Ms. Muster is attributed to a sufficient amount of acidification flora, which leads to a neutralisation of the alkaline metabolites.

### Potential pathogenous enterobacteria

**Enterobacter sp.** is regarded as ubiquitous bacteria of soil and water and is often found in the intestinal tract of humans and animals. Bacteria counts of **10<sup>6</sup> CFU / g stool** may indicate inflammatory mucosa alteration. *Enterobacter* are typical opportunists which may occur as pathogens in hospitals causing infections in immune suppressed patients.

### Lactobacilli - Enterococci

**Lactobacilli** and **enterococci**, which belong to the physiological small intestine flora, develop sour metabolic products and anti-bacterial substances (e.g. lactocidin, acidophilin, hydrogen peroxide), which prevent alien bacteria colonization in the small intestines (small intestine **colonisation resistance**). Reduced lactobacilli counts often indicate non-physiological flora condition in the terminal ileum. Causes may be among others:

- **neurodermatitis**
- **food allergies**
- **food intolerances** or
- **overgrowth syndromes.**

### Mucosal immunity- immunogenic germs

**Escherichia coli** have a strong **immunogenic effect**. A constant contact between immunogenic intestinal bacteria and immature plasma cells in the Peyer's patches keeps the mucosal immune system (MIS) at a high level of activity. With a deficit of immunogenic intestinal bacteria this effect is omitted and the defence of the MIS decreases.

## Supplementary Parameters

### Determination of Digestive Disorders

Raised **concentrations of fat** were found. An increased occurrence of undigested food residues may be due to **nutritional errors** (high-fat diet) or **digestive disorders**. The low water content of the stool sample indicates a **retarded passage through the intestine** or **constipation**.

### Determination of Maldigestion

#### Digestive function of the pancreas

**Pancreatic elastase 1** correlates closely to the digestive function of the exocrine pancreas. The value obtained for patient Mr. / Ms. Muster speaks for an adequate function of the organ.

#### Bile Acids in Stool

The concentration of bile acids was within normal range. Loss of bile acid as cause of maldigestion can therefore be excluded. There is no ileum dysfunction.

Laboratory-Id N°. **11625426**  
Received **16.11.2018**  
Report **06.12.2018**  
Last Name **Muster**  
First Name **Muster**  
Date of Birth **09.06.1978**

**Biovis Diagnostik MVZ  
GmbH**

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

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

Index

BOSC

## Determination of Malabsorption

### Mucosa Integrity and Permeability

**Increased alpha-1-antrypsin values** indicate inflammatory mucosa irritations, which may lead to impaired absorption of metabolic food products and micronutrients. Increased alpha-1-antitrypsin values normally come along with increased intestinal mucosa permeability. Large amounts of food allergens pass the mucosa block and thus strain the following systemic body defence system.

## Mucosa Immunity

### Mucosa Integrity and Permeability

The increased sIgA concentration in stool indicates active defence reactions of the intestinal mucosa. This may be caused e.g. by inflammatory or allergic processes.

Laboratory-Id N<sup>o</sup>. **11625426**  
Received **16.11.2018**  
Report **06.12.2018**  
Last Name **Muster**  
First Name **Muster**  
Date of Birth **09.06.1978**

**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

Index

BOSC

## Therapy Recommendations

Independent of the cause of marker increases, one should first try to reach healing of the mucosa reactions with the aid of anti-inflammatory measures. According to recent studies with CED patients treatment with **phosphatidylcholine** (lecithin) seems to be very successful. Colon Guard stabilizes and solidifies the mucosal mucus and thus leads to the development of an effective mucosa barrier. Also amino acids (glutamine, arginine, lysine and methionine) promote wound healing and mucosa reconstruction (e. g. Aminoplus immun). Mainly **glutamine** - as nutrient of the intestinal epithelia cells – counteracts the 'leaky gut syndrome'; it can also be given alone (e. g. Aminoplus Glutamin, Colon Guard, and Adamin G).

### Milieu Stabilisation by Promoting the Intestinal Acidification Flora

If the intestinal flora is characterized by **increased putrefactive bacteria**, one can try to reduce the pH-value in the gut lumen by giving lactic acid producing bacteria or prebiotics. This promotes the reconstitution of the intestinal acidification flora and inhibits putrefactive bacteria growth. Less toxic metabolic products (ammonia, hydrogen sulphide) are produced which will relief the liver.

Because of the flora situation and **inflammatory mucosal irritations**, we recommend e.g. Omni-biotic 10 for two weeks, followed by Omni-biotic stress, which should be given for another 8 – 12 weeks.

Omni-biotic 10 is a modern probiotic which was developed to prevent the multiplication of toxin-producing **clostridium difficile** strains and other **potentially pathogenic organisms**. This is achieved by using germ strains, which **actively inhibit** pathogenic organisms and have a clearly **immune-stimulating effect**. Alternatives of similar composition or indication: Ecologic 825, Synbiotic Neuro Fit, Lactobact Forte.

Omni-biotic stress has aside from the influence on the microflora and the mucosal immune system, strong **anti-inflammatory properties**. Via cytokine release reduction, stabilization of the mast cells and increased mucin production, Omni-biotic Stress leads to reduced mucosa permeability (Leaky Gut) and stabilizing of the tight junctions. According to recent studies, the probiotic agent also shows a preventive effect against negative psychological effects caused by stress. Alternatives of similar composition or indication: Ecologic 825, Synbiotic Neuro Fit, Lactobact Forte.

### Microbiological Therapy

Increased bacteria counts of **potential pathogenic enterobacteriaceae** (Enterobacter species) are often caused by insufficient mucosal immunity. The mucosal immune system can be activated via the **microbiological therapy**, applying preparations with viable (Symbioflor I, II, Mutaflor) or inactivated germs (ProSymbioflor). Preparations with viable bacteria principally have a stronger immune stimulating effect than those with inactivated bacteria.

### Dietetic Treatment

Inflammatory mucosa reactions require dietary measures in the sense of **bland balanced diets**, which in spite of disordered resorption provide for sufficient consumption of metabolic food products and micronutrients.

Where the low water content in stool is concerned, it should be ensured that sufficient liquid is consumed (at least 2- 3 litres of water with low amounts of carbonic acid and herbal tea).

### Check-up

After the therapy a check-up may be carried out after 8-12 weeks.

Laboratory-Id N°. **11625426**  
Received **16.11.2018**  
Report **06.12.2018**  
Last Name **Muster**  
First Name **Muster**  
Date of Birth **09.06.1978**

**Biovis Diagnostik MVZ  
GmbH**

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

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

Index

BOSC

---

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.*



## Easily Digestible Diets -

## Inflammatory Markers in Stool

In your stool samples inflammatory markers like for example calprotectin or alpha-1-antitrypsin were found. This means there are obvious inflammatory irritations of the intestinal tract. To relieve the inflamed areas of the gastro-intestinal tract, the consumption of poorly tolerated foods should be avoided or at least limited. They should be replaced by easily digestible foods.

These are the most important goals:

- Relief and regeneration of the gastro-intestinal tract
- Balanced nutrient and energy supply
- Compensation of certain nutrient deficiencies.

Foods to be avoided:	
<b>Flatulent vegetables</b>	cabbage, leak, onions, paprika, mushrooms, pulses, cucumbers
<b>Hot spices</b>	chilli, pepper, paprika powder
<b>Foods with high fat content</b>	deep-fried, fat fish, lard, fat cheese, mayonnaise,
<b>Foods with high sugar content</b>	sweets, products with sugar substitutes (fructose, sorbitol etc.)
All too hot or too cold foods and drinks	
Fizzy drinks, alcohol and coffee	

If food is tolerated or not depends on the individual person concerned. Intolerances may have an effect, like for example “**acquired lactose/milk sugar intolerance**” caused by gastrointestinal inflammations.

If flatulence respectively diarrhoea occurs within an hour after eating milk products, this should be clarified (e.g. with the aid of a breath-gas test).

All in all the diet should consist of easily digestible foods with a fine structure and low to medium fibre content, which do not strain the intestinal functions too much (see right). At the same time foods should contain a lot of valuable nutrients, e.g. vitamins and minerals.

Longer term intestinal irritations result in reduced nutrient consumption.

This often concerns following nutrients:

- fat-soluble vitamins: A, D, E and K
- B -vitamins
- iron
- selenium
- zinc
- sodium
- potassium

### Well tolerated are most of the time...:

- Tender young vegetables and green salads
- Porridge/purée of flakes/wholemeal
- Unsweetened finished mueslis
- Brown rice, millet, amaranth, quinoa, buckwheat
- Wholemeal bread with fine crumb structure, wholemeal crisp bread and zwieback
- Fine-structure wholemeal pastry
- Pasta, potatoes
- Eggs, curd, lean fish, poultry, veal
- Fruits, ripe and low-acid, e.g. melons, passion fruits, bananas
- Honey, fruit butter and small amounts of fruit purée

Frequently **fat digestion disorders** occur; this means fats consumed with food are partly excreted undigested with stool (steatorrhoea). So-called MCT-fats<sup>1</sup> can be used especially in case of fat resorption disorders. The switch to these fats should be gradual to give the intestines time to adapt. Products like margarine, oils,

cheese spread or spreads are partly enriched with vitamins or omega-3 respectively omega-6 fatty acids. (MCT-fats are available in health shops).

In case of temporary lactose intolerance it is more difficult to provide the calcium required. Therefore one should resort to lactose-free calcium carriers.

- Mineral water with calcium contents >250 mg / litres
- Calcium enriched soya drinks and products e.g. offered by Alpro or Vitaquell.
- Lactose reduced milk and respective products.
- Fruit juices (diluted) with added calcium
- Vegetables with high calcium content like broccoli and fennel.
- Sesame- and nut butter (easier to digest than whole seeds and nuts).

Oxalic acid inhibits calcium consumption. This acid occurs only in plant-based foods. The products below have very high oxalic acid concentrations.

- *Cacao*
- *Spinach*
- *Rhubarb*
- *Sorrel*
- *Chard*
- *Black Tea*



Therefore care should be taken that milk products are not consumed at the same time as above mention foods.

#### **Finally some additional tips:**

- Chew thoroughly – this makes work easier for the gastro-intestinal tract.
- Take your time when you eat.
- Drink a lot to balance loss of liquid