Frau Muster	
Date of Birth	31.01.1966
External Barcode	
Barcode	
Request Code	1401110341
Specimen collection date	07.01.2014
Date of Receipt	11.01.2014 08:28
Reporting Date	16.01.2014

Frau Muster

Laboratory*report*

Sample Material: faeces

Test	Result	Initial Result	Norm
gastrointestinal diagnostics			
Flora status:			
Consistency of faeces	breiig		
pH-value of faeces	6,5		5,5 - 6,5
Most common aerobic germs:			
Escherichia coli	**2 x 10^8**		1x10^6 - 9x10^7
Proteus species	<1 x 10^4		< 1x10^4
Klebsiella species	<1 x 10^4		< 1x10^4
Enterobacter species	<1 x 10^4		< 1x10^4
Hafnia alveii	<1 x 10^4		< 1x10^4
Serratia species	<1 x 10^4		< 1x10^4
Providencia species	<1 x 10^4		< 1x10^4
Morganella morganii	<1 x 10^4		< 1x10^4
Kluyvera species	<1 x 10^4		< 1x10^4
Citrobacter species	<1 x 10^4		< 1x10^4
Pseudomonas species	<1 x 10^4		< 1x10^4
Enterococcus species	3 x 10^7		1x10^6 - 9x10^7
Most common anaerobic germs:			
Bacteroides species	9 x 10^9		1x10^9 - 9x10^11
Bifidobacterium species	6 x 10^9		1x10^9 - 9x10^11
Lactobacillus species	7 x 10^6		1x10^5 - 9x10^7
Clostridium species	**9 x 10^7**		< 1x10^6
Clostridum difficile	negativ		negativ

Fungi (quantitative):

Candida albicans	<1 x 10^3	< 1x10^3
Candida species	<1 x 10^3	< 1x10^3
Geotrichum species	<1 x 10^3	< 1x10^3
Mould fungi	negativ	negativ

Digestion residues:

Fecal fat content**	4,0 g/100g	< 3,5
Fecal water content**	77 g/100g	75 - 85
Fecal protein content**	1,1 g/100g	< 1,0
Fecal starch content (amylorrhoea)**	12,0 g/100g	9 - 13
Fecal sugar content**	1,0 g/100g	< 2,5

Malabsorption/Inflammation:

Fecal alpha-1-antitrypsin	4,2 U/ml	< 27,5
Fecal calprotectin	25,8 mg/kg	< 50

Maldigestion:

Fecal pancreatic elastase	358,9 µg/g	> 200
Fecal bile acids	negativ	negativ

Immunity of the intestinal mucosa:

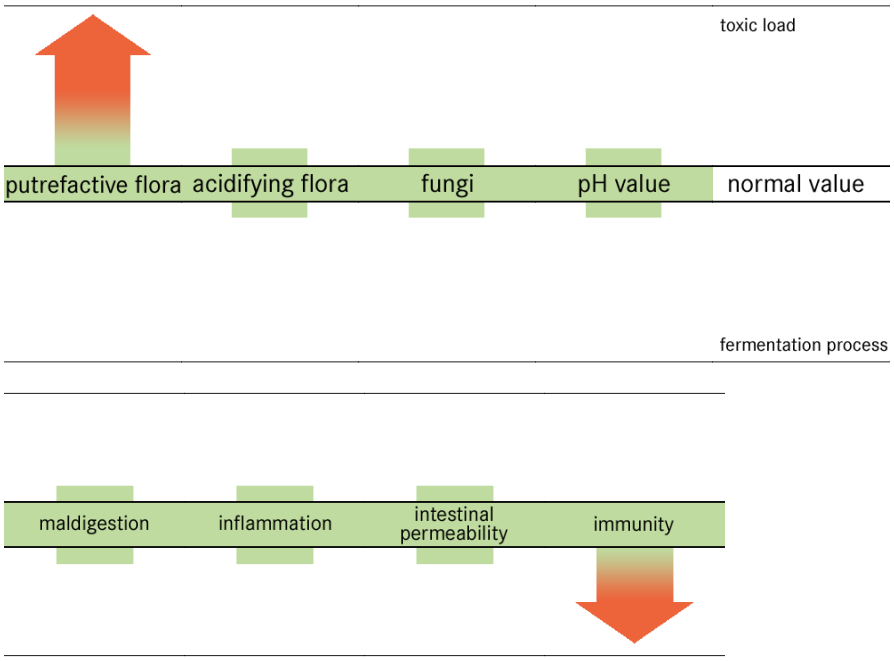
Fecal secretory IgA	<277.5 µg/ml	510 - 2040

Overall assessment

Overview stool diagnostics:

- Instable intestinal milieu
- Indication of reduced degree of activity of the intestinal mucosa immune system

Stool diagnostics - diagnosis interpretation



Flora index = 3

1 - 5: mild dysbiosis
6 - 12: intermediate dysbiosis
> 12: Pronounced dysbiosis

Biochemie-Index = 4

0: without
1 - 5: mild
6 - 12: intermediate
> 12: pronounced

The higher the biochemical index, the larger the shift into pathogenic regions.

Flora status

The stool flora analysis mainly shows **increased counts of E. coli and Clostridium species**. Putrefactive bacteria mainly metabolise protein and fat, which results in the formation of toxic, alkaline metabolites that may damage the intestinal mucosa in the long run. The metabolic products in the intestine are detoxified by the liver, which may stress the organ substantially (endogenous intoxication). To assess the quantitative and qualitative extent of such a strain on the organism caused by undesired microbial metabolites, we recommend checking for organic acids in the early morning urine (Organix®-Dysbiose).

Aerobic bacteria

Microbes capable of utilising oxygen are called aerobes. This is the flora of the upper intestinal sections (with exception of the aerobic coli bacteria, which settle in the colon). The ratio between aerobes to anaerobes is approx. 1:10.000.

Enterobacteriaceae

The group of enterobacteriaceae includes e.g. E. coli as well as representatives of the strains Citrobacter, Enterobacter, Hafnia, Klebsiella, Morganella, Proteus, Pseudomonas, Serratia and Yersinia. As these are widespread in the environment, they can also be detected in the faeces of people with healthy intestines due to their consumption with food. However, excess multiplication should be counteracted. Germ counts of above 10^5 KBE/g faeces may indicate a disturbed colonisation resistance. Enterobacteriaceae produce endotoxins, enterotoxins as well as cytotoxins, which may cause inflammatory intestinal mucosa irritations.

Enterobacteriaceae are widespread in the environment, low germ counts can also be detected in the faeces of people with healthy intestines due to their consumption with food.

An **increased detection of germs of the genus enterobacteriaceae** can be interpreted as an expression of disturbed colonisation resistance and is often detected in case of a diet rich in raw fruit and vegetables, intestinal hypomotility as well as insufficient chewing. An insufficient activity of the intestinal immune system may also be a cause of enterobacteriaceae proliferation. The diagnosis could thus be associated with an insufficient formation of sIgA or indicate an inappropriate diet or indigestion.

Enterobacteriaceae belong to the group of putrefying germs. The decomposition of proteins results in the formation of toxic-aggressive substrates, which may lead to inflammable mucus membrane mutations in case of high germ counts. Enterobacteriaceae can increase the pH value in the colon due to the production of alkalising metabolites so that the growth of the antagonistic acidifying flora is increasingly inhibited in its growth and dispersed. Enterobacteriaceae should show physiological germ counts.

The following contains detailed information about the increased detection of genera of the group of enterobacteriaceae:

A rise of the **Escherichia coli** count may lead to the release of large quantities of gaseous metabolites, especially in case of increased carbohydrate supply and cause meteorism and flatulence). In case of an increased protein supply, E. coli produces adverse metabolites in the shape of biogenic amines (histamine, tyramine, putrescine, agmatine) as well as ammonia, which may result in a subtoxic strain of the liver.

To assess an increased presence of stressful metabolites, different biogenic amines as well as organic acids can be detected in the urine.

Anaerobic bacteria

Anaerobes are microbes that can only survive in an environment depleted of oxygen. This is the flora of the colon, which makes up altogether approx. 99% of the faecal flora.

Clostridium species
The **elevated count** of Clostridia spp. is an indicator for a **disturbed colonisation resistance** and generally due to **adverse nutrition and lifestyle habits** (e.g. changed nutrition habits as well as restricted chewing activity due to age, a diet low in crude fibre, a diet high in fats and proteins, sluggish bowels (due to a lack of mobility), the intake of cholesterol-binding drugs), which leads to an increased substrate availability.
Maldigestion and/or malabsorption may also lead to a strongly elevated substrate presence and thus better survival chances for Clostridia.
Clostridia are distinguished by their intense metabolic activity. Their fat and protein utilisation produces toxic metabolites that strain the entire organism (e.g. biogenic amines, ammonia, enterotoxins). Toxin-forming strains may cause severe cases of colitis in case of predisposing factors. Some Clostridia spp. are able to develop precancerous substances from bile acid (NDH-Clostridia), which are associated with the development of colorectal carcinoma. In addition, some types are strong gas developers, so that increased flatulence complaints may be attributed to Clostridia.

Yeasts/fungi

Candida albicans
Candida albicans was **not detected** in the stool sample. However, please note that in case of an adhering yeast flora, a chronologically discontinuous scaling off of fungus cells has to be expected, which explains the frequent alternation of fungus-negative and fungus-positive faeces. As it is therefore not always possible to verify the presence of yeasts in a one-off specimen, we recommend the determination of D-arabinitol in early morning urine in case of a clinical suspicion of intestinal mycosis.

D-arabinitol is a sensitive marker for the detection of excess intestinal yeast growth. The result eases the diagnosis of antimycosis. In case of an inconspicuous D-arabinitol concentration, the therapy may be restricted to milieu-stabilising (candida-suppressing) measures.

Digestion residues

The slightly increased fat and/or protein residues with normal pancreas elastase do not have a pathogenic significance here. Wrong nutrition should still be excluded. In case of dyspeptic complaints, one should consider supporting the digestive function with the help of phytotherapeutic substances.

Mucus membrane immunity

Secretory IgA in the stool
The **reduced concentration of sIgA** in the stool indicates a reduced activity of the mucosa immune system. A permanently reduced sIgA value may be associated with an increased susceptibility to infections as well as an elevated risk of allergies. **Secretory immunoglobulin A (sIgA)** inhibits the penetration and colonisation of potentially pathogenic bacteria, viruses or fungi via the intestinal mucosa and neutralises antigens (also food antigens) as well as toxins.
Notable: Among others, the creation of sIgA is steered by the activity of the so-called TH3 cells. TH3 cells play an important role in the induction and maintenance of the oral tolerance against food components. The risk for food allergies or to IgG-provided immune responses against antigenes stands in immediate dependence of a sufficient TH3 activity.

To draw conclusions on a limited TH3-Sytsem, the differentiation of the regulatory t cells is advisable in case of persistierend lower fecal sIgA level.

The **secretory Immunoglobulin A** gives a general idea about the function of the intestinal-associated immune system. It also inhibits the penetration and colonization of potentially pathogenic bacteria, viruses or fungus through the intestinal mucosa and neutralized a variety of antigens and toxins.

Please contact a doctor or therapist to discuss the transmitted laboratory results within an individual meeting.

Medically validated by Dr. Ralf Kirkamm and colleagues.
This finding has been produced electronically and is valid without signature.

All parameters marked with an * are tested at our accredited laboratory partners.
** Accreditation projected