Gut Microbiome Test XL

Lab test Stool

Name: **Sample Report** Date of test: **07/06/2023** Analysis-ID: **DUMMY-12**

getTested

Table of contents

○ Determination of aerobic bacteria	page 7
○ Determination of anaerobic bacteria	page 10
○ Mycological stool examination	page 11
○ pH-value	page 12
○ Digestive residues	page 12
○ Detection of indigestion	page 12
○ Detection of malabsorption	page 13
○ Mucosal immunity	page 15
○ Leaky gut	page 15
○ Stress and food intolerance	page 16

Your test results

How to interpret your results

If the arrow on the scale is within the green area, your value is good. If the arrow is within the yellow, orange or red area, it indicates a deviation. Some parameters can not be set too high or too low, in which case the scale starts or ends on the green area, this is completely correct. For an explanation of the various parameters, please see Part 2 entitled Extended information.

Determination of aerobic bacteria

Name	Your value	Unit	Reference value	Scale
Escherichia coli	4,0 x 10^7	CFU/g stool	10^6 - 10^7	
Escherichia coli Biovare	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Proteus spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Klebsiella spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Pseudomonas spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Enterobacter spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Serratia spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Hafnia spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	
Enterococcus spp.	< 1,0 x 10^4	CFU/g stool	10^6 - 10^7	

Determination of anaerobic bacteria

Name	Your value	Unit	Reference value	Scale
Bifidobacterium spp.	1,0 x 10^8	CFU/g stool	10^9 - 10^11	
Bacteroides spp.	5,0 x 10^8	CFU/g stool	10^9 - 10^11	
Lactobacillus spp.	< 1,0 x 10^4	CFU/g stool	10^5 - 10^7	

Name	Your value	Unit	Reference value	Scale
Clostridium spp.	< 1,0 x 10^5	CFU/g stool	< 1,0 x 10^5	

Mycological stool examination

Name	Your value	Unit	Reference value	Scale
Candida spp.	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	
Candida albicans	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	
Yeast	negativ	Negative		
Geotrichum candidum	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	

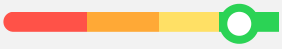
pH value

Name	Your value	Unit	Reference value	Scale
pH value	7.30		5,8 - 6,5	

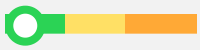
Digestive residues

Name	Your value	Unit	Reference value	Scale
Quantitative determination of fat	7.30	g/100g	< 3,5	
Quantitative determination of nitrogen	1.00	g/100g	< 1,0	
Quantitative determination of sugar	3.20	g/100g	< 2,5	
Quantitative determination of water	69.30	g/100g	75 - 85	

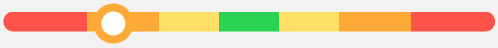
Detection of indigestion

Name	Your value	Unit	Reference value	Scale
Pancreatic elastase	402.73	µg/g	> 200	
Bile acids in stool	17.17	µmol/l	< 70	

Detection of malabsorption

Name	Your value	Unit	Reference value	Scale
Calprotectin	17.90	mg/l	< 50	
Alpha-1 antitrypsin	23.04	mg/dl	< 27,5	

Mucosal immunity

Name	Your value	Unit	Reference value	Scale
Secretory IgA	234.15	µg/ml	510 - 2040	

Leaky gut

Name	Your value	Unit	Reference value	Scale
Zonulin	91.73	ng/ml	< 55	

Stress load and food intolerance

Name	Your value	Unit	Reference value	Scale
Histamine	5387.60	ng/ml	< 959	

Extended information

Explanation of your test results

The intestinal [illegible] are includes the bacteria and other microorganisms that are naturally present in the intestine. Our intestinal [illegible] are have broad in [illegible] areas on human health and diseases. It modulates the immune system, provides the organism with vitamins, participates in the digestion of food components, supplies intestinal epithelium with energy by producing short-chain fatty acids and stimulates intestinal peristalsis.

Determination of aerobic bacteria

Escherichia coli

Name	Your value	Unit	Reference value	Scale
Escherichia coli	4,0 x 10^7	CFU/g stool	10^6 - 10^7	

Escherichia coli belongs to the putrefactive bacteria. Putrefactive bacteria are bacteria that thrive in an alkaline environment and produce ammonia. At high pH, they grow and can compete with other good bacteria.

Putrefactive bacteria primarily metabolize protein and fat, which produce toxic metabolites such as ammonia, indole, skatole and hydrogen sul [illegible]de. This can damage the intestinal mucosa and may lead to an increase in the pH of the colon (> 6.5) in the long term.

Elevated levels are often caused by insu [illegible]cient activity in the mucosal immune system. If the intestinal [illegible] are is characterized by an increased amount of putrefactive bacteria, one can try to reduce the pH value in the intestinal lumen by supplementing with pre- or probiotics. This promotes the reconstitution of the intestinal ecoli- cation [illegible] are and inhibits the growth of putrefactive bacteria. Less toxic metabolic by-products are produced, which alleviates the damage on the intestine and other vital organs such as the liver and kidneys.

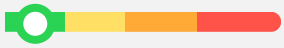
Escherichia coli Biovare

Name	Your value	Unit	Reference value	Scale
Escherichia coli Biovare	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

Escherichia coli Biovare are subspecies of Escherichia coli that does not normally occur in the intestine. There are several types such as hemolytic, mucoid and lactose-negative E. coli. It is not uncommon to [illegible] nd hemolytic or mucoid E. coli while lacking a favorable E. coli and alkaline pH.

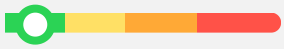
Elevated levels can also be caused by insu [illegible]gient mucosal immunity. This is mainly due to too low production of secretory IgA.

Proteus spp.

Name	Your value	Unit	Reference value	Scale
Proteus spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

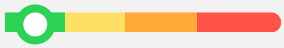
Elevated levels of Proteus species often occur in Crohn's disease and urinary tract infections.

Klebsiella spp.

Name	Your value	Unit	Reference value	Scale
Klebsiella spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

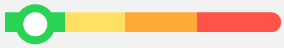
High levels indicate an increased inflammatory activity in the intestine. Klebsiella can release histamine and may cause abdominal pain, bloating, gas and diarrhea. Elevated levels of Klebsiella is common after prolonged use of antibiotics.

Pseudomonas spp.

Name	Your value	Unit	Reference value	Scale
Pseudomonas spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

Elevated levels of Pseudomonas species may occur in an inflammation of the intestine. Elevated levels can lead to diarrhea and loose stool.

Enterobacter spp.

Name	Your value	Unit	Reference value	Scale
Enterobacter spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

Enterobacter species belong to the putrefactive bacteria. Putrefactive bacteria are bacteria that thrive in an alkaline environment and produce ammonia. At high pH, they grow and can compete with other good bacteria. Putrefactive bacteria primarily metabolize protein and fat, which produce toxic metabolites such as ammonia, indole, skatole and hydrogen sulfide. This can damage the intestinal mucosa and may lead to an increase in the pH of the colon (> 6.5) in the long term.

Enterobacter species are common bacteria in soil and water and are often found in the intestinal tract of humans and animals. High levels are often associated with an inflammatory process in the intestinal mucosa. Enterobacter are opportunistic that can occur as pathogens in hospitals where they cause infections in people with weakened immune systems.

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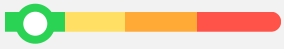
Serratia spp.

Name	Your value	Unit	Reference value	Scale
Serratia spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

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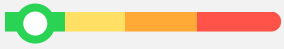
Hafnia spp.

Name	Your value	Unit	Reference value	Scale
Hafnia spp.	< 1,0 x 10^4	CFU/g stool	< 1,0 x 10^4	

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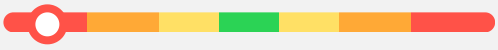
Enterococcus spp.

Name	Your value	Unit	Reference value	Scale
Enterococcus spp.	< 1,0 x 10^4	CFU/g stool	10^6 - 10^7	

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Determination of anaerobic bacteria

Bifidobacterium spp.

Name	Your value	Unit	Reference value	Scale
Bifidobacterium spp.	1,0 x 10^8	CFU/g stool	10^9 - 10^11	

Bi dobacteria are needed, among other things, to protect against potentially pathogenic microbes, for the synthesis of short-chain fatty acids and to stimulate GALT (gut-associated lymphoid tissue), as well as to break down complex carbohydrates and indigestible fiber. They are part of the acidifying flora and mainly use carbohydrates as their fuel substrate. They produce short-chain fatty acids (acetate and butyrate), which lower the pH value in the intestinal lumen and therefore inhibit the growth and spread of putrefactive bacteria.

Weak bi dobacteria can lead to deterioration of colonization resistance in the colon. Bi dobacteria develop a microbial barrier against infection by occupying mucosal receptors. These counteract the colonization and spread of pathogenic bacteria, yeast or parasites.

Low levels can be due to a weakened intestinal mucosa or too little fiber in the diet. Excessive levels are rare. Bi dobacteria is a very common bacterial strain used in probiotics. Bi dobacteria is also well supported by prebiotics.

Bacteroides spp.

Name	Your value	Unit	Reference value	Scale
Bacteroides spp.	5,0 x 10^8	CFU/g stool	10^9 - 10^11	

Bacteroides species belong to the genus Bacteroidetes. Their task is to break down indigestible fiber and produce butyrate/butyric acid.

As with Bi dobacteria, weak Bacteroides flora can lead to deterioration of colonization resistance in the colon. Bi dobacteria develop a microbial barrier against infection by occupying mucosal receptors. These counteract the colonization and spread of pathogenic bacteria, yeast or parasites.

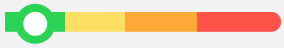
Too low levels of Bacteroides species indicate a disturbance in the intestinal microbiota and can lead to overgrowth of other microbes. Too low levels can also reduce the production of short-chain fatty acids. A diet rich in fiber and prebiotics is recommended at low levels.

Lactobacillus spp.

Name	Your value	Unit	Reference value	Scale
Lactobacillus spp.	< 1,0 x 10^4	CFU/g stool	10^5 - 10^7	

Lactobacillus is a bacterial species that occur in the small intestine and form antibacterial substances and metabolic products that prevent foreign bacteria from colonizing in the small intestine. Too low levels can occur in, among other things, neurodermatitis, food allergies or food intolerances. Excessive levels can occur with impaired digestive capacity.

Clostridium spp.

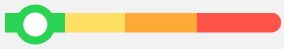
Name	Your value	Unit	Reference value	Scale
Clostridium spp.	< 1,0 x 10^5	CFU/g stool	< 1,0 x 10^5	

[illegible]

Mycological stool examination

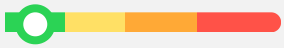
[illegible]

Candida spp.

Name	Your value	Unit	Reference value	Scale
Candida spp.	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	

[illegible]

Candida albicans

Name	Your value	Unit	Reference value	Scale
Candida albicans	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	

[illegible]

Yeast

Name	Your value	Reference value
Yeast	negativ	Negative

[blurred]

Geotrichum candidum

Name	Your value	Unit	Reference value	Scale
Geotrichum candidum	< 1,0 x 10^3	CFU/g stool	< 1,0 x 10^3	

[blurred]

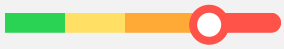
The properties of the stool

Name	Your value	Unit	Reference value	Scale
pH value	7.30		5,8 - 6,5	

[blurred]

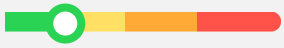
Digestive residues

Quantitative determination of fat

Name	Your value	Unit	Reference value	Scale
Quantitative determination of fat	7.30	g/100g	< 3,5	

Elevated levels of fat in the stool may be due to diet (high fat diet) or indicate disorders of fat breakdown or absorption. It may be due to disturbances in bile excretion, bile acid absorption or incomplete secretion of lipolytic enzymes from the pancreas.

Quantitative determination of nitrogen

Name	Your value	Unit	Reference value	Scale
Quantitative determination of nitrogen	1.00	g/100g	< 1,0	

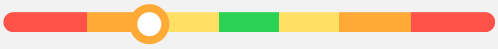
Elevated levels may indicate a disturbance in the breakdown or absorption of protein in the small intestine.

Quantitative determination of sugar

Name	Your value	Unit	Reference value	Scale
Quantitative determination of sugar	3.20	g/100g	< 2,5	

Elevated levels are often due to carbohydrate intolerance. Common causes are fructose malabsorption or lactose intolerance. Inadequate carbohydrate metabolism may also be due to exocrine pancreatic insufficiency with reduced secretion of carbohydrate-cleaving enzymes.

Quantitative determination of water

Name	Your value	Unit	Reference value	Scale
Quantitative determination of water	69.30	g/100g	75 - 85	

Low levels indicate a delayed passage through the intestine or constipation. Elevated levels indicate an accelerated passage or diarrhea/loose stools.

Pancreatic elastase

Name	Your value	Unit	Reference value	Scale
Pancreatic elastase	402.73	µg/g	> 200	

[blurred]

Bile acids in the stool

Name	Your value	Unit	Reference value	Scale
Bile acids in the stool	17.17	µmol/l	< 70	

[blurred]

Detection of malabsorption

Calprotectin

Name	Your value	Unit	Reference value	Scale
Calprotectin	17.90	mg/l	< 50	

[blurred]

Alpha-1 antitrypsin

Name	Your value	Unit	Reference value	Scale
Alpha-1 antitrypsin	23.04	mg/dl	< 27,5	

[illegible]

[illegible]

[illegible]

Mucosal immunity

Secretory IgA

Name	Your value	Unit	Reference value	Scale
Secretory IgA	234.15	µg/ml	510 - 2040	

[illegible]

[illegible]

[illegible]

[illegible]

Leaky gut

Zonulin

Name	Your value	Unit	Reference value	Scale
Zonulin	91.73	ng/ml	< 55	

Zonulin is a protein that modulates the permeability of the tight junctions in the intestinal mucosa. This is so that nutrients and other molecules can pass through. If you have a leaky gut, these tight junctions are more open than usual and larger protein molecules that normally shouldn't be allowed through can pass.

Elevated levels are associated with increased intestinal permeability and where low levels indicate a tight and stable intestinal mucosa. Increased intestinal permeability can cause an immune response/reactions and sensitizations. Increased levels of zonulin are often measured in patients with celiac disease, type 1 diabetes and many other autoimmune diseases.

In case of elevated zonulin levels, the following is recommended:

A) Supplementing with broad-spectrum probiotics that support the intestinal flora and directly affect the stabilization of tight junctions.

B) Supplementing with lecithin/phosphatidylcholine that support the intestinal mucosa.

C) Supplementing with humic acids that cover the mucosa cells. This then passively reduces the permeability of the intestinal mucosa. In addition, humic acids promote mucus production and neutralize toxins.

Stress load and food intolerance

Histamine

Name	Your value	Unit	Reference value	Scale
Histamine	5387.60	ng/ml	< 959	

Elevated levels of histamine in the stool indicate histamine intolerance or an IgE-mediated food allergy. It may be due to a disturbance in the production of the enzyme diamine oxidase (DAO), which function is to break down histamine in the gut. In addition, it can be due to celiac or Crohn's disease, food intolerance (IgE) or to stress, which via the increase of norepinephrine leads to the degranulation of mast cells and thereby increased histamine release in the gut.

How can you use the results

IR is a treatment protocol developed by the Institute for Functional Medicine in the United States to restore gastrointestinal health and other problems that originate therefrom. If you have any imbalances, we recommend that you follow the program as described below. The program usually takes between 3-6 months to complete.

1. Remove

Find and exclude any microbes, foods or toxins that may interfere with normal intestinal function and exclude them. Examples of antimicrobial herbs are Allicin/garlic extract, berberine, caprylic acid, grape seed extract, olive leaf extract and oil of oregano. If you suspect food intolerances or a toxic load, we offer food intolerance tests and heavy metals tests.

2. Replace

Support the digestive system with suitable digestive support. For example, betaine HCl with pepsin, digestive enzymes or herbs such as cardamom, cinnamon, fennel, gentian, ginger and turmeric.

3. Reinocculate

Balance the intestinal are with dietary bar, prebiotic foods and probiotic supplements. Choose prebiotics according to the intestinal bacteria you are low on according to the test results.

4. Repair

Support the intestinal mucosa. Examples of substances to support the intestinal mucosa are aloe vera, B-vitamins, essential fatty acids, L-glutamine, Marshmallow root and vitamin A.

5. Rebalance

Balance your lifestyle, diet, exercise, sleep and stress.

Other information

Leaky gut

The intestine is of great importance for the health of the body. In addition to absorbing nutrients, it have a very important function for our immune system - the intestinal mucosa acts as a protective barrier between the body and our environment.

In order to perform its tasks correctly, the intestines need:

- A balanced bacterial population (our intestinal flora/microbiome)
- Adequate production of substances that support the intestinal mucosa
- Adequate levels of secretory IgA (sIgA)
- An undamaged intestinal epithelial cell layer

The intestinal flora is important in fighting endogenous infections. The commensal intestinal flora is a barrier that makes it difficult for unwanted bacteria from outside of the body to settle in the intestine. This is called colonization resistance.

The mucus produced by the intestinal mucosa is important for the transport of food in the intestines. It protects the mucosa, is important for its integrity and is therefore the basis for maintaining normal permeability. In addition, sIgA is transferred to and distributed in the intestines with the mucus. sIgA has the important job of binding antigens of all types in the intestinal lumen, for example bacteria, viruses, large macromolecules, etc. In this way it reduces the stress on the mucous membrane while keeping the antigen inside the intestines, prevents it from coming into contact with the mucous membrane and leads it out of the body.

sIgA thus controls the antigens in the body and the frequency of infection. It is therefore very important for the immune system.

The controlled (nutrient) substance passage from the intestinal lumen into the circulatory system takes place at the intestinal epithelial layer. First, this is done by the cells themselves (transcellular) and secondly between the cells (paracellular). The transcellular transport takes place without further disturbance of the cells via simple diffusion, via specialized receptors or by enclosing the substances by invaginating the cell membrane (endocytosis). The para-cellular passage through the single epithelial layer, on the other hand, takes place at so-called "tight junctions". These are parts of a protein network, which encloses the cells and seals the gaps more or less. In some places, at these "tight junctions", the network allows a controlled passage of liquid and dissolved or colloidal substances.

If one or even several of the above conditions for a healthy gastrointestinal system are missing, various health problems will soon arise. If the intestinal flora is not in good condition, for example, pathogens can spread more easily and cause infections. If sIgA is not available in sufficient amounts, the antigenic load on the immune system increases. If the epithelial layer and its tight junctions do not hold tight, large amounts of unwanted substances can pass into the body. These issues can spread over time and cause problems in different parts of the body - especially autoimmune diseases.

Leaky gut and its significance

A well-functioning absorption capacity in the intestines is crucial for providing the body with nutrition. On the other hand, the intestinal mucosa protects the body from pathogenic bacteria, contaminants, etc. Therefore, a controlled permeability in the intestines is of great importance for our health.

If the intestinal permeability increases, large amounts of substances pass into the circulatory system. The increased amount of substances can have a negative effect on the body in the long term. The consequence of this is a reaction of the immune system against these substances - i.e. the intestinal mucosa is inflamed, which in the long run leads to damage to the intestinal mucosa, which further increases the intestinal permeability and a vicious cycle is initiated.

Underlying causes of increased intestinal permeability

Milder intestinal inflammation

During asymptomatic periods a diet rich in fiber is recommended to reduce inflammation. If you change your diet, remember to do it gradually.

Foods that are usually well tolerated:

- Amaranth, buckwheat, brown rice, millet and quinoa
- Eggs, offal, lean meat and poultry
- Cooked vegetables
- Potatoes and other tubers
- Porridge
- Ripe fruits

Nutritional deficiencies

Imbalance in the intestines can lead to impaired nutrient uptake. If you have any digestive issues, it can be a good idea to test yourself for any deficiency of vitamin B12, iron, magnesium and zinc.

MCT oil

MCT oil is composed of medium-chain triglycerides, which are used in disorders of fat absorption and can be used as a readily available energy source. They can be more easily absorbed and digested independently of bile acids and digestive enzymes. Adding these fats should be done gradually to allow the intestines to adapt.

Fiber-rich Food

Dietary fiber is a substance that the body can only use to a certain extent. Normally, fibers are excreted undigested, but can also be processed by the intestinal flora and provide beneficial metabolic products such as butyrate that are very valuable for the body.

- Fibers have a structure that requires them to be chewed more and longer. Chewing leads to the release of saliva, which in turn counteracts caries and tooth decay. Chewing a lot also leads to a faster feeling of satiety.
- Dietary fiber swells and binds water. This prolongs the feeling of satiety. It also increases the weight of the stool and stretches the intestinal walls, which triggers the muscles in the intestines to work and stimulates intestinal emptying. Improved bowel movements make it easier for toxin substances to be excreted from the body and reduce the risk of diseases linked to excessive toxin exposure.
- Fibers do not just bind water in the intestine. Bile acids produced from cholesterol are also bound up and excreted in the stool. The body is thus forced to form new bile acids from cholesterol and the cholesterol level is lowered.
- Dietary fiber is important for people with diabetes, as it has a positive effect on blood sugar.
- Dietary fiber stimulates the growth of beneficial bacteria and strengthens our natural intestinal flora while reducing the growth of unfavorable bacteria and harmful metabolic substances.

The general dietary recommendation for fiber intake is 25-30 grams of fiber per day for adults. In the table below you can see how much fiber different foods contain.

Type of food	Foods	Fiber in g / 100 g
Legumes (uncooked)	Broad beans Brown beans Mung beans Soybeans White beans	16,4 16,4 16,0 15,3 15,8
Fruits	Pomegranate Passion fruit Raisins Dried apricots Dried figs	10,0 15,9 9,7 12,0 18,5
Vegetables	Avocado Brussels sprouts Artichoke Sun-dried tomatoes Wheat sprouts	4,8 4,5 5,0 12,7 14,0
Grains	Fiber oatmeal Oat bran Hard bread (whole grain) Wheat bran Wheat germ	15,0 18,0 24,0 37,5 30,5

[illegible]

This test does not replace medical consultation. Always seek medical attention if you experience severe symptoms.

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