

elsavie

# health starts from the inside

We are glad that you are curious about what's going on in your gut. Thank you for ordering the microbiome test kit from SYNLAB medical laboratory.

The analysis is conducted in collaboration with Elsavie.

The following report is developed by Elsavie in collaboration with Center of Food and Fermentation Technologies (TFTAK).

SYNLAB 

In the report, you'll find:



## 1 what's going on in your gut?

Overview of the results with the most relevant characteristics of microbial community.



## 2 how to feel better?

Assessment of the analyzed parameters together with further recommendations.



## 3 your food recommendations

A summary of your personal recommendations.



## 4 dietary fiber content

Overview of which foods contain the most fiber.



## 5 appendix

- A** 25 most abundant bacteria species
- B** Abundance of common bacteria in your gut
- C** Pro-inflammatory bacteria in your gut



## why does it matter what happens in the gut?

A diverse and balanced microbial community protects your body and ensures correct functioning of the digestive tract, as well as affects the human immune system and metabolism. The balanced community is formed mainly by commensal microbes that prevent the overgrowth of pathogens. On the other hand, imbalanced microbial community can contribute to different health problems, such as irritable bowel syndrome, inflammation, overweight, diabetes, allergies and other chronic diseases. Diet plays a significant role in shaping the microbiome, although important factors are also our environment, lifestyle, illnesses, medications, our genes as well as maternal-derived bacteria. **Long-term healthy lifestyle and dietary habits are needed to keep your gut microbiome balanced.** It is important to have a diverse diet rich in fiber, which improves your digestion and supports the growth of different beneficial bacteria.



## a healthy gut is a happy gut!

Fermented foods contain probiotic bacteria that have beneficial properties to our body. Such foods are for example fermented vegetables (pickles, sauerkraut), dairy products (kefir, yoghurt, cheese) and beverages (kvass, kombucha). In addition to probiotic foods, fiber-rich diet is important in balancing your microbial community. Fiber is a type of carbohydrate that the body can't digest, instead they are partially degraded by intestinal microbes. Fiber consumption helps to prevent constipation and relieve diarrhea. Further, fiber-rich diet helps to maintain normal weight by reducing blood sugar levels and preventing blood sugar spikes, resulting in the decrease of constant need for sweets. Fiber-rich food increases the volume of food mass, resulting in faster feeling of fullness. At the same time there is less energy in the fiber-rich food than in sugary and fatty foods, meaning that, overall, less food is consumed. **It is important to consume various fibers from different sources, as different bacterial species prefer different types of fiber.** It is recommended to consume your fiber with enough water (20g of water per 1g of fiber).



## add fiber-rich foods to your menu:



cereals



legumes



vegetables



fruits



nuts & seeds

### Attention!

- Results and recommendations presented in the report are based on the published scientific literature and research.
- This microbiome analysis includes only bacterial community and does not include fungi, parasites and viruses.
- The results presented in the report are for guidance only and are not applicable as a medical diagnosis by a physician.
- This analysis is not suitable for the diagnosis of infectious diarrhea. In case of suspicion of bowel infection, additional analysis are recommended. Information about additional analysis can be requested from SYNLAB customer support.



# 1 what's going on in your gut?

● your result  
 — control group values  
 | median of control group

your result compared to healthy control group

your value of the parameter

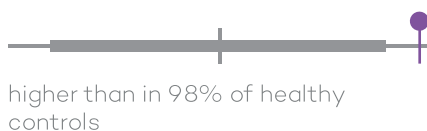
## microbiome diversity



3.3  
shannon



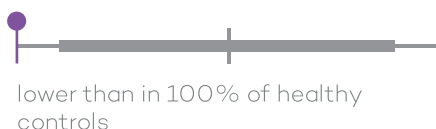
## pro-inflammatory bacteria



3.8%  
abundance



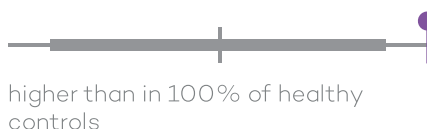
## butyric acid producing bacteria



11%  
abundance



## bacteria associated with protein and fat consumption



26%  
abundance



## bifidobacteria



0.6%  
abundance



## lactobacillus



0.2%  
abundance





## 2 how to feel better?

### microbiome diversity



good

The diversity of the microbiome characterizes the balance of gut community and is important for the assessment of a healthy community. A diverse microbial community indicates a healthy gut, as a wide variety of different bacteria are present in such community. There were 70 different bacterial species detected in your gut (around 90–130 species are usually present in a healthy community).

### microbiome type

*Bacteroides* enterotype

Intestinal microbial communities can be simplified into two types: *Bacteroides* enterotype and *Prevotella* enterotype. Although, in terms of health one enterotype cannot yet be highlighted in front of another, it primarily reflects long-term dietary habits. In particular *Bacteroides* enterotype is associated to western-style diet with high fat and high protein consumption, whereas *Prevotella* enterotype indicates a diet rich in fibers and complex carbohydrates. Enterotypes are relatively stable and therefore long-term dietary changes are required to move from one enterotype to another.

### pro-inflammatory bacteria



high

A balanced microbial community plays an important role in reducing the adverse effects of inflammation-inducing bacteria. A healthy, varied diet supports the growth of beneficial bacteria that compete with pro-inflammatory bacteria for intestinal colonization and nutrient uptake.

### recommendation

Fiber-rich diet supports the diversity of microbial community. It is important to have a varied diet by consuming different types of fiber from different sources.



cereals



vegetables



fruits



legumes

### recommendation



high-fat  
and high-  
protein  
products

### recommendation

Reduce the consumption of sweets, sweetened beverages and other products enriched with sugars.



fruits



vegetables



berries



sweets

**butyric acid producing bacteria**

As a result of food digestion, gut bacteria produce different beneficial compounds, among which butyric acid plays an important role in providing anti-inflammatory response. Butyric acid is particularly important as it is a primary energy resource for intestinal epithelial cells enabling many beneficial features: reduction of toxin accumulation, increase of insulin sensitivity, reinforcement of gut barrier function (reproduction of mucin layer) and protection from diet induced obesity.

**bacteria associated with protein and fat consumption**

High-protein, high-fat diet, which is low in fibers has a significant effect on the intestinal environment. Such diet enhances the growth of mucosa-attached species, which can lead to pro-inflammatory response. Commonly, higher protein and fat intake is associated with higher abundance of Bacteroides species. However, very low abundance of Bacteroides species is unusual and may be related to limited food choices.

**bifidobacteria**

Bifidobacteria are considered as health-promoting bacteria. They have a significant impact on infant health. Despite decreasing abundance in adult microbiomes, these bacteria play an important role in restoring intestinal health. Therefore, bifidobacteria are added to different probiotic dairy products, such as kefir and yoghurt.

**recommendation**

Growth of butyric acid producers can be promoted with the consumption of food rich in fructooligosaccharides (FOS) and resistant starch (RS).

wholegrain  
cerealsjerusalem  
artichoke,  
potato\*

banana\*\*

**recommendation**

Replace meat with plant-based protein sources at least once a day.



legumes

plant-based  
protein (e.g  
tofu)

meat

**recommendation**

The growth of beneficial bifidobacteria is promoted by fibers, such as resistant starch and inulin.



rice\*

jerusalem  
artichoke,  
potato\*,  
asparagus,  
onion

banana\*\*

probiotic  
dairy

**lactobacillus**

good

Lactobacilli are lactic acid producing bacteria, that are considered as health-promoting bacteria. They are used in the production of fermented dairy products (e.g kefir, yogurt) and vegetables (e.g pickles, sauerkraut). Various probiotic strains of this genus are added to kefir, yogurt, and other dairy products. The consumption of lactobacilli is particularly recommended in case of indigestion, such as antibiotic-induced diarrhea.

**recommendation**

Enrich your diet with different probiotic products.

fermented  
vegetablesprobiotic  
dairy**microbiome richness**

low

Microbiome richness indicates the ability of gut community to adapt to changing conditions. It is important in assessing a healthy community. Lower richness is accompanied by critical changes in the community, e.g increase in pro-inflammatory bacteria and decrease in anti-inflammatory species. Potential causes for lower richness can be intake of antibiotics or one-sided diet low in fiber.

**recommendation**

Higher richness is promoted by a diverse plant-based diet rich in fiber.



cereals



vegetables



fruits



legumes

**resistant starch degrading bacteria**

good

The main features of resistant starch is to create the feeling of fullness and help to regulate blood sugar level. It slows down the absorption of sugar into the bloodstream and thus improves insulin sensitivity as well as lowers the risk of diabetes.

**recommendation**

Enrich your diet with different products, rich in resistant starch.



rice\*



potato\*



banana\*\*

**asaccharolytic bacteria**

high

Many gut microbes degrade fiber and other complex carbohydrates into beneficial compounds that are absorbed in our intestine. If the fiber intake decreases, the growth of asaccharolytic bacteria increases. Such bacteria start to degrade alternative nutrients such as amino acids and mucus and thus promote the development of inflammation in the gut.

**recommendation**

Consume different types of fiber from different sources.



cereals



vegetables



fruits



legumes

**sulfate-reducing bacteria**

high

Sulfate-reducing bacteria produce toxic gas (H<sub>2</sub>S), which in high concentrations can promote the inflammatory condition in the gut.

**recommendation**

Avoid consuming excessive amounts of food high in sulfur, e.g fish, poultry. We recommend replacing meat with plant-based protein sources (such as beans, lentils, chickpeas) at some meals, which also helps to increase fiber intake.



legumes

plant-based protein (e.g  
tofu)

fish, poultry

**Christensenellaceae family**

not detected

This bacteria family is associated with low body mass index (BMI). They are considered as one of the most heritable microbes in the gut and therefore less related to diet and other environmental factors.

**recommendation**

As this family is mainly inherited, it is not known, which foods increase the abundance of these bacteria.

**Akkermansia genus**

not detected

This bacteria genus is associated with rather good bowel health, weight loss and low body mass index (BMI).

**recommendation**

At present, it is not known exactly, which foods increase the abundance of these bacteria in the gut microbial community.

**Alistipes genus**

not detected

The abundance of this bacteria genus is associated with good health, weight loss and low body mass index (BMI).

**recommendation**

The abundance of these bacteria is increased by the consumption of cruciferous vegetables and animal-derived food.

cabbage,  
swede,  
broccolianimal-  
derived  
products

***Bilophila* genus**

high

This genus is usually detected in low abundance in the gut microbial community of healthy people. It is a bile-resistant bacterium associated with diet rich in animal-derived products and saturated fatty acids. These bacteria produce toxic gas (H<sub>2</sub>S) which in high concentrations can promote the inflammatory condition in the gut.

**recommendation**

Enrich your diet with fruits and vegetables.



fruits

root vege-  
tableshigh-fat  
meat***Blautia* genus**

low

High abundance of this bacteria genera is associated with diet rich in cereals.

**recommendation**

cereals  
(particularly  
brown rice)

***Bacteroides vulgatus* species**

high

High abundance of this species may favor inflammatory conditions in the gut.

**recommendation**

Increase the intake of food rich in resistant starch and eat less meat.



rice\*



potato\*



banana\*\*



red meat

***Dorea formicigenerans* species**

high

This bacterial species is associated with overweight and inflammatory conditions in gut, such as irritable bowel syndrome (IBS) and ulcerative colitis (IBD-UC).

**recommendation**

In case of persistent digestion problems, that disturb your everyday life, consult with your physician for further analysis.

***Ruminococcus bicirulans* species**

high

High abundance of this species reflects high-protein diet, that's low in cereals.

**recommendation**

Eat whole-grain products, rich in arabinoxylan.



wholegrain  
wheat, rye,  
barley





# 3 your food recommendations

Summary of recommendations personally for you. For more precise evaluation and adjustment of your diet, please contact your local nutritionist or nutritional therapist.

## enrich your diet:



cereals

rice\*, wholegrain barley, rye bran, wholegrain wheat, rye bread, whole-grain rye, multigrain, brown rice, wheat bran



vegetables

onion, jerusalem artichoke, swede, bell pepper, carrot, beetroot, cabbage, broccoli, lettuce, cucumber, avocado, potato\*



legumes

beans, chickpeas, lentils



fruits

plum, tangerine, apple, banana\*\*, orange



berries

strawberry, blackcurrant



nuts & seeds

linseeds



other

plant-based protein (e.g. tofu), psyllium

## reduce your consumption:



meat

fish, animal-derived products, poultry



sweets

candies, cookies, sweetened beverages, pastries and other sweets

## your consumption of sweets



needs attention

It is recommended to limit the consumption of sweets (including sweetened beverages). Sweets are high in energy, but often very low in fiber, vitamins and minerals. Sugar-rich products can also cause uncomfortable bloating and flatulence.

## recommendation

Added sugar in food should not exceed 10% of the recommended daily energy intake.



sweets

## your sleep



needs attention

The time and quality of sleep affect many functions in the body, including our eating behaviour. Sleep deprivation promotes appetite for carbohydrate- and energy-rich foods and also increases the amount of food eaten.

## recommendation








Pay attention to sleep 7-9 hours every night.



# 4 dietary fiber content



More information about the fiber content in other food products can be found at [tka.nutridata.ee/en](http://tka.nutridata.ee/en)

Product	Fiber in cooked or baked food	Fiber in raw product/dry matter
 vegetables cabbage potato* cucumber onion avocado tomato carrot	● ● ● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ●
 fruits plum banana** orange apple tropical fruits	● ● ● ● ● ●	● ● ● ● ● ●
 berries blackcurrant strawberry blueberries	● ● ● ● ● ● ●	● ● ● ● ● ● ●
 legumes chickpeas beans lentils	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ●
 cereals oat flakes rye bread whole-wheat pasta buckwheat white rice* brown rice white-wheat pasta white bread graham bread (from multi-grain)	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●	● ●
 nuts & seeds linseeds nuts sunflower seeds	● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ●
 other psyllium mushrooms	● ● ● ● ● ●	● ● ● ● ●

\* Boiled potato and rice, that is refrigerated contains more fiber, as some of the starch is converted into resistant starch.  
 \*\* The fiber content in bananas depends on its ripeness. Raw (green) bananas have higher fiber content, as resistant starch partially degrades into digestible starch, when banana is ripened.



**to see changes**

in your microbial community, we recommend doing next analysis at least one month after starting with your dietary changes.



**start step-by-step**

to make long-lasting changes in your dietary habits. If necessary, consult with a nutritionist or nutritional therapist.



**don't forget**

the basis of an active lifestyle – physical activity supports your digestion.



**make sure**

that you consume at least 25-35g of fiber per day.



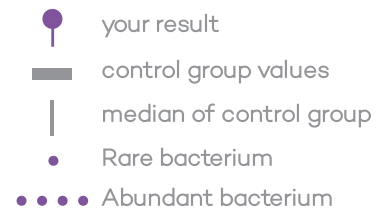
**give us feedback,**

If you are satisfied with our service or if you have any suggestions. With your help, we can provide even better experience in the future. You can contact us, via e-mail [info@elsavie.com](mailto:info@elsavie.com).

**a healthy  
gut is a  
happy gut!**

# 5 appendix

We recommend following the overall picture of the microbial community, not the abundances of individual bacteria. Suggestions based on your results are described in the previous chapters. The ratings of the results are statistical and do not always indicate health status.



✓ Comparable to average  
⚠ Different from average

Bacteria	Abun.	Comparison with control group	Reference range	Prevalence	
Unclassified species and therefore comparison with reference is not accurate*					
Bacteria was not detected from your sample**					

## A 25 most abundant bacterial species in your microbial community with a comparison to a control group of healthy adults

<i>Bacteroides vulgatus</i>	23%		0.2–7.2%	●●●●	⚠
<i>Lachnospiraceae unclassified</i>	11%		27–46%	●●●●	*
<i>Mitsuokella jalaludinii</i>	3.7%		0.5%	●	⚠
<i>Catenibacterium mitsuokai</i>	3.2%		0.5–2.1%	●●●	⚠
<i>Faecalibacterium prausnitzii</i>	2.9%		3.1–11%	●●●●	⚠
<i>Alloprevotella unclassified</i>	2.7%		0.7–4.1%	●●	✓
<i>Subdoligranulum formicilis</i>	2.7%		0.3–3.5%	●●●●	✓
<i>Dialister invisus</i>	2.6%		0.2–2.5%	●●●	⚠
<i>Ruminococcaceae unclassified</i>	2.6%		16–36%	●●●●	*
<i>Collinsella aerofaciens</i>	2.3%		0.2–2.6%	●●●●	✓
<i>Ruminococcus bicirculans</i>	2.2%		0.05–1.2%	●●●●	⚠
<i>Prevotella_1 unclassified</i>	2.2%		2.3%	●	*
<i>Blautia wexlerae</i>	2.0%		1.2–4.1%	●●●●	✓
<i>Prevotella stercorea</i>	1.9%		0.1–1.8%	●●	⚠



<i>Dorea longicatena</i>	1.8%		0.4–14%	●●●●	!
<i>Ruminococcus bromii</i>	1.7%		0.09–4.2%	●●●	✓
<i>Lachnospirillum faecis</i>	1.6%		0.2–10%	●●●●	!
<i>Bacteroides uniformis</i>	1.6%		0.06–1.6%	●●●●	✓
<i>Eubacterium rectale</i>	1.2%		0.2–5.9%	●●●●	✓
<i>Clostridium sensu stricto unclassified</i>	1.2%		0.2–1.2%	●●●	!
<i>Sutterella wadsworthensis</i>	1.2%		0.05–0.8%	●●●	!
<i>Coriobacteriaceae unclassified</i>	1.2%		1.3–4.1%	●●●●	*
<i>Dorea formicigenerans</i>	1.1%		0.2–0.6%	●●●●	!
<i>Escherichia unclassified</i>	10%		0.01–0.5%	●●●	!
<i>Escherichia coli</i>	10%		0.01–0.5%	●●●	!

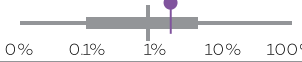
## B Abundance of common bacteria in your gut

<b><i>Akkermansia sp.</i></b>	<0.01%		0.04–0.8%	●●●	**
<i>Akkermansia muciniphila</i>	<0.01%		0.04–0.8%	●●●	**
<b><i>Alistipes sp.</i></b>	<0.01%		0.2–1.3%	●●●●	**
<i>Alistipes fingoldii</i>	<0.01%		0.02–0.2%	●●●	**
<i>Alistipes putredinis</i>	<0.01%		0.06–0.7%	●●●●	**
<i>Alistipes shahii</i>	<0.01%		0.02–0.3%	●●●●	**
<b><i>Bacteroides sp.</i></b>	26%		1.3–17%	●●●●	!
<i>Bacteroides cellulosilyticus</i>	0.3%		0.02–0.7%	●●●	✓
<i>Bacteroides eggerthii</i>	0.3%		0.01–0.6%	●●	✓

<i>Bacteroides plebeius</i>	<0.01%		0.07–5.4%	●●●	**
<i>Bacteroides thetaiotaomicron</i>	<0.01%		0.05–0.4%	●●●	**
<i>Bacteroides uniformis</i>	1.6%		0.06–1.6%	●●●●	✓
<i>Bacteroides vulgatus</i>	23%		0.2–7.2%	●●●●	!
<b><i>Bifidobacterium sp.</i></b>	0.6%		0.5–12%	●●●●	✓
<b><i>Bilophila sp.</i></b>	0.5%		0.02–0.1%	●●●●	!
<i>Bilophila wadsworthia</i>	0.5%		0.02–0.1%	●●●●	!
<b><i>Blautia sp.</i></b>	2.2%		4.7–9.9%	●●●●	!
<i>Blautia faecis</i>	0.2%		0.2–2.2%	●●●●	!
<b><i>Christensenellaceae</i></b>	<0.01%		0.4–5.4%	●●●	**
<b><i>Citrobacter sp.</i></b>	<0.01%		0.03–0.06%	●●	**
<i>Citrobacter freundii</i>	<0.01%		0.03–0.05%	●●	**
<b><i>Collinsella sp.</i></b>	3.3%		0.7–3.2%	●●●●	!
<i>Collinsella aerofaciens</i>	2.3%		0.2–2.6%	●●●●	✓
<b><i>Coprococcus sp.</i></b>	0.3%		0.2–1.0%	●●●●	✓
<i>Coprococcus comes</i>	0.3%		0.2–0.9%	●●●●	✓
<b><i>Dialister sp.</i></b>	2.6%		0.3–2.6%	●●●	!
<b><i>Dorea sp.</i></b>	3.2%		1.1–2.6%	●●●●	!
<i>Dorea formicigenerans</i>	1.1%		0.2–0.6%	●●●●	!
<i>Dorea longicatena</i>	1.8%		0.4–1.4%	●●●●	!
<b><i>Eggerthella</i></b>	<0.01%		0.01–0.06%	●●	**
<i>Eggerthella lenta</i>	<0.01%		0.01–0.06%	●●	**






<b>Escherichia sp.</b>	2.0%		0.01–0.5%	● ● ●	⚠
<i>Escherichia coli</i>	1.0%		0.01–0.5%	● ● ●	⚠
<b>Eubacterium sp.</b>	1.3%		0.3–6.0%	● ● ● ●	✓
<i>Eubacterium rectale</i>	1.2%		0.2–5.9%	● ● ● ●	✓
<b>Faecalibacterium sp.</b>	2.9%		5.8–15%	● ● ● ●	⚠
<i>Faecalibacterium prausnitzii</i>	2.9%		3.1–11%	● ● ● ●	⚠
<b>Fusicatenibacter sp.</b>	0.2%		0.5–2.7%	● ● ● ●	⚠
<i>Fusicatenibacter saccharivorans</i>	0.2%		0.2–2.0%	● ● ● ●	✓
<b>Holdemanella sp</b>	0.8%		0.2–2.9%	● ● ●	✓
<i>Holdemanella biformis</i>	<0.01%		0.08–1.3%	● ● ●	**
<b>Klebsiella sp.</b>	<0.01%		0.09–0.3%	● ●	**
<b>Lachnosp. sp</b>	2.3%		1.4–4.9%	● ● ● ●	✓
<i>Lachnosp. torques</i>	<0.01%		0.08–0.7%	● ● ●	**
<i>Lachnosp. faecis</i>	1.6%		0.2–1.0%	● ● ● ●	⚠
<i>Lachnosp. gnavus</i>	<0.01%		0.02–0.2%	● ●	**
<i>Lachnosp. lactaris</i>	<0.01%		0.07–1.1%	● ● ● ●	**
<b>Lactobacillus sp.</b>	0.2%		0.03–1.9%	● ● ●	✓
<b>Prevotella sp.</b>	0.2%		0.04–33%	● ● ● ●	✓
<b>Roseburia sp.</b>	1.1%		2.0–7.9%	● ● ● ●	⚠
<i>Roseburia faecis</i>	<0.01%		0.08–3.3%	● ● ● ●	**
<i>Roseburia intestinalis</i>	<0.01%		0.03–1.7%	● ● ● ●	**
<i>Roseburia inulinivorans</i>	0.07%		0.03–1.6%	● ● ● ●	✓



<b><i>Ruminococcus_1 sp.</i></b>	2.7%		1.7–5.9%	●●●●	✓
<i>Ruminococcus bicirculans</i>	2.2%		0.05–1.2%	●●●●	!
<b><i>Ruminococcus_2 sp.</i></b>	1.7%		0.4–6.5%	●●●●	✓
<i>Ruminococcus bromii</i>	1.7%		0.09–4.2%	●●●	✓
<b><i>Streptococcus sp.</i></b>	0.8%		0.04–0.9%	●●●●	✓
<i>Streptococcus salivarius</i>	0.8%		0.03–0.6%	●●●	!
<b><i>Veillonella sp.</i></b>	<0.01%		0.01–0.07%	●●●	**



## Abundance of pro-inflammatory bacteria in your gut

<i>Sutterella wadsworthensis</i>	1.2%		0.05–0.8%	●●●	!
<i>Escherichia unclassified</i>	1.0%		0.01–0.5%	●●●	!
<i>Escherichia coli</i>	1.0%		0.01–0.5%	●●●	!
<i>Bilophila wadsworthia</i>	0.5%		0.02–0.1%	●●●●	!
<i>Campylobacter showae</i>	0.1%		<0.01%	-	!