



Last name First name
Number and street
Postal address

Dear FinHealth 2017 participant,

We would like to thank you for participating in our study. Each participant has played a part in successfully carrying out a study that is important to the promotion of health and functional capacity. Below are your laboratory test results that only you will receive. Target values or reference values are shown next to your results. If your results differ from the target values, they have been marked with a star (*). We will also provide some general instructions about what you can do, if your results differ from the target values.

If you so wish, you may give these laboratory test results to your own doctor or nurse, for their information. If you have any questions about the study or your results, please do not hesitate to contact Public Health Nurse Hanna Valtonen, by calling +358 (0)29 524 8607, on Mondays between 9.00 am and 11.00 am. At other times, you can leave a call-back request at the same number, for example, by leaving a text message or sending a contact request by e-mail to finterveys@thl.fi

Date of examination: xx.xx.xxxx

	Your result	Target value or reference values ("normal" variation)
S-Kol (total cholesterol):		less than 5,0 mmol/l
S-Kol-HDL (so-called good cholesterol)		women over 1,2 mmol/l men over 1,0 mmol/l
S-Kol-LDL (so-called bad cholesterol)		less than 3,0 mmol/l
S-Trigly (triglycerides)		less than 1,7 mmol/l
S-LipoA1 (transfers good cholesterol)		women 1,2–2,3 g/l men 1,1–2,0 g/l
S-LipoB (transfers bad cholesterol)		women 0,6–1,3 g/l men 0,6–1,5 g/l
fP-Gluk (blood sugar)		less than 6,1 mmol/l
S-GT (liver function test)		women less than 40 U/l men less than 60 U/l
S-ALAT (liver function test)		women less than 35 U/l men less than 50 U/l
S-ASAT (liver function test)		women less than 35 U/l men less than 45 U/l
S-hs-CRP (inflammation level)		less than 3 mg/l
S-Ca (calcium)		2,15 – 2,51 mmol/l
S-Uraat (uric acid)		women under 50 years 155–350 µmol/l, women over 50 years 155–400 µmol/l men 230–480 µmol/l
S-Krea (kidney function test)		women 50–90 µmol/l men 60–100 µmol/l

BLOOD LIPID VALUES

An elevated serum total cholesterol value is a key risk factor in cardiovascular diseases. The level of cholesterol is influenced by nutrition, and the easiest way to lower it is with dietary changes. If your level of cholesterol is above 5 mmol/l, we recommend that you consider making changes to your lifestyle.

If your level of cholesterol is above 6.5 mmol/l, we recommend that you have a new test taken in about 3 months. When necessary, you can contact your local health centre or occupational health services. Values should be monitored, especially if, in addition to a high cholesterol level, you suffer from high blood pressure, diabetes or overweight or if you smoke.

If your total cholesterol value is above 8.0 mmol/l and you do not receive treatment for high cholesterol, we recommend that you schedule an appointment at your local health centre or occupational health service, as soon as possible, to evaluate your need for medical care.

HDL cholesterol (so-called good cholesterol) protects you from cardiovascular diseases. **LDL cholesterol** is the so-called bad cholesterol that is calculated based on total cholesterol, HDL cholesterol and triglyceride values. LDL cholesterol cannot be reliably calculated if the triglyceride value is above 4 mmol/l; in this case, the LDL value is not given in the table.

Elevated triglycerides are a risk factor in cardiovascular diseases. Your triglyceride value is only reliable if you followed the fasting instructions before your tests.

S-LipoA1 (apoA-1) and **S-LipoB (apoB)** are proteins that carry cholesterol and other fats in your body. ApoA-1 carries cholesterol ("good" HDL cholesterol) to the liver for resecretion. A lowered serum apoA-1 level increases the risk of cardiovascular diseases. ApoB, on the other hand, carries fats from food, from the liver to the body for use ("bad" LDL cholesterol). A high serum apoB level increases the risk of cardiovascular diseases. Especially in connection with obesity, metabolic syndromes and diabetes, apoA-1 and apoB may give a more accurate estimate of cardiovascular disease risk, than cholesterol tests alone.

BLOOD SUGAR

Glucose or blood sugar is elevated in diabetes or if the blood sample has been taken 1-3 hours after eating. If the sample is taken after more than 4 hours of fasting, values above 7.0 mmol/l indicate potential diabetes and the results should be checked at your local health centre or occupational health service, if you have not previously been diagnosed with diabetes.

LIFESTYLE EFFECTS BLOOD LIPID VALUES AND BLOOD SUGAR LEVELS

Blood lipid values are affected by nutrition, exercise and alcohol use. If your values differed from the target and reference values, we recommend that you aim to reduce the amount of saturated fats in your diet. Fatty milk products, fatty meat and meat products, fatty pastries and butter all contain saturated fats. Recommended alternatives include chicken, fish (especially fatty fish such as salmon), low-fat and fat-free milk products, vegetables, fruits and grain products, as well as vegetable oils, such as rapeseed oil and plant-based margarines.

If you are overweight, losing weight is beneficial. Exercising more and reducing alcohol consumption may improve blood lipid values.

An elevated blood sugar level can also be lowered by increasing the amount of exercise and making dietary changes (by reducing saturated fats and increasing the use of soft fats and fibre-rich foods, such as vegetables, fruits and wholegrain products.) If you are overweight, it is important to lose weight, especially if your blood sugar levels are high.

OTHER LABORATORY TESTS

S-GT, S-ALAT and S-ASAT are tests for liver function, where elevated values may indicate liver dysfunction. The reason for elevated values from liver function tests may be excessive alcohol consumption or serious overweight, as well as diseases that cause liver dysfunction, such as hepatitis or cholelithiasis. Some medications or other diseases may also elevate the values. If your liver function values are elevated, we recommend that you contact your local health centre or occupational health service. If your GT value is 200 U/l or above and/or your ALAT value is 100 U/l or above and/or your ASAT value is 100 U/l or above, we recommend that you schedule a doctor's appointment, as soon as possible, to determine the cause of the liver dysfunction and need for treatment.

The S-CRP value rises with inflammatory diseases. The CRP value is considerably higher with bacterial inflammations, than it is with virus diseases. The CRP value normalises rather quickly, as the inflammation heals. High-sensitivity CRP (hs-CRP) is used to measure a mild inflammation that can occur with cardiovascular diseases, obesity, metabolic syndrome, high blood pressure and diabetes. If your sensitive CRP value is elevated and you did not have an inflammatory disease, such as a common cold or a tooth infection at the time of giving the samples, we recommend that you schedule an appointment at your local health centre or occupational health service. With low-grade systemic inflammation, cardiovascular risk factors, especially high blood pressure, abnormal blood lipid levels and diabetes, should be treated as efficiently as possible.

Calcium is a vital mineral and its concentration in the blood is regulated by the parathyroid hormone and vitamin D. Over 99 percent of your body's calcium is in your bones. Many diseases, such as hyperparathyroidism, tumors that have spread to the bones and sometimes even excessive intake of vitamin D, may raise the blood calcium value. Similarly, hypoparathyroidism, celiac disease and vitamin D deficiency are related to chronic inflammation of the small intestine and may lower the blood calcium concentration. If your calcium values are either above or below the recommended values, we recommend that you schedule an appointment at your local health centre or occupational health service, for a calcium level control and need for possible further examinations.

Urate (uric acid) is a metabolite that exits the body through the kidneys. In addition to hereditary factors, being overweight, abdominal obesity centred around the waistline, alcohol and certain diuretics may increase urate values. Gout forms uric acid crystals in joints and sometimes in other tissues. In a gout attack, the uric acid crystals cause an inflammation in the joint, generally at the base of the big toe. A mildly elevated blood urate level is quite common. Checking urate level elevating lifestyle choices is all that is required for treatment. Blood urate level lowering medication is required if urate levels are considerably high and/or you experience gout symptoms.

Creatinine values elevate with a liver dysfunction. Creatinine is connected to muscle energy metabolism. Creatinine transfers from muscles into the blood and through the kidneys, and finally into urine. The amount of creatinine being formed is dependent on muscle mass. This is why men's creatinine values are usually higher than women's. The creatinine value of a muscular man may be slightly elevated, even if his kidneys are healthy. With mild renal impairment, the creatinine value elevates only slightly. Serum creatinine levels also rise after a meal that contains a lot of meat. Haemodialysis treatment is required for severe renal impairment (creatinine value 500 $\mu\text{mol/l}$ or above). We recommend that you schedule an appointment at your local health centre or occupational health service, if your creatinine value is elevated. If your creatinine value is 200 $\mu\text{mol/l}$ or above, we recommend that you schedule an appointment at your local health centre or occupational health service, as soon as possible, to determine the cause of and need for treatment for possible kidney disease.

We will send you later your health profile, with other results on your health in addition to these laboratory test results.

Thank you for participating in the FinHealth study,

Seppo Koskinen
MD, Research Professor

Katja Borodulin
Senior Researcher