An actionable guide to maximize your healthspan

Report for [redacted]

Sample date: May 15, 2023

Hello [redacted]...

Thank you for taking the AgingSOS™ test by Jinfiniti Precision Medicine. Our mission is to empower our customers to learn about their bodies and make the most informed decisions so they can to avoid chronic diseases and maintain wellness as they age. We operate under the philosophy that you can only improve what you measure, which is why we measure actionable biomarkers of aging found in the blood. With the information in this report, you can change your lifestyle to improve your biomarkers and improve your health as you age.

By purchasing AgingSOS™, you have invested in yourself and enlisted us to provide the most accurate testing and up-to-date information to make your long-term health a reality.

Hopefully this is the first of many reports that we will have the pleasure of sharing with you.

Thanks,

JINFINITI
PRECISION MEDICINE

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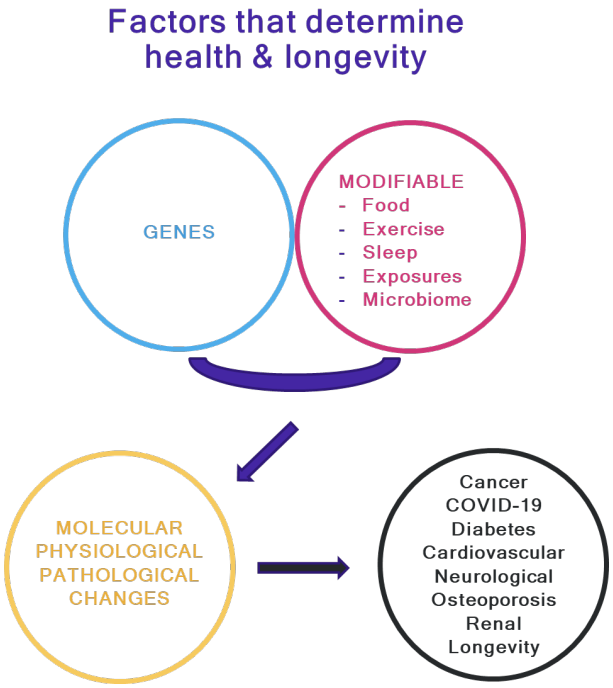
Introduction

Maximize your healthspan

Many factors can influence your healthspan and your response to medical treatment for diseases. Some of these factors are genes that you inherit from your parents that do not change over your lifetime. However, the expression of your genes are constantly altered by many other factors inside and outside of your body. These factors, which can be called non-genetic, extrinsic, environmental, or modifiable factors, are most important in determining your healthspan.

Modifiable factors for health and longevity

While your DNA is the master code for your health and longevity, there are many factors that affect how you age: what you eat and drink, how much and when you eat, how much you exercise, how much and how well you sleep, how much stress you experience, whether you are exposed to pollution, radiation, UV rays, toxins, infections and many other environmental risks. These factors have a huge impact on your health, but you are in control of them and your healthspan.



Interplay between genes and modifiable factors

Our health is determined by the interplay between our unique genetic makeup and our modifiable factors. This dynamic interplay results in a cascade of molecular, cellular and physiological changes, which determine our health, our response to treatment for our diseases and ultimately our longevity. These dynamic changes can be monitored using laboratory tests that measure biomarkers - meaningful signals about our health.

What AgingSOS™ measures

AgingSOS® are specially designed biomarker panels that measure molecular and cellular functions that are altered with age and predispose aging persons to higher risks of developing age-related diseases such as cancer, diabetes, cardiovascular, renal, neurological, COVID-19 and other infectious diseases.

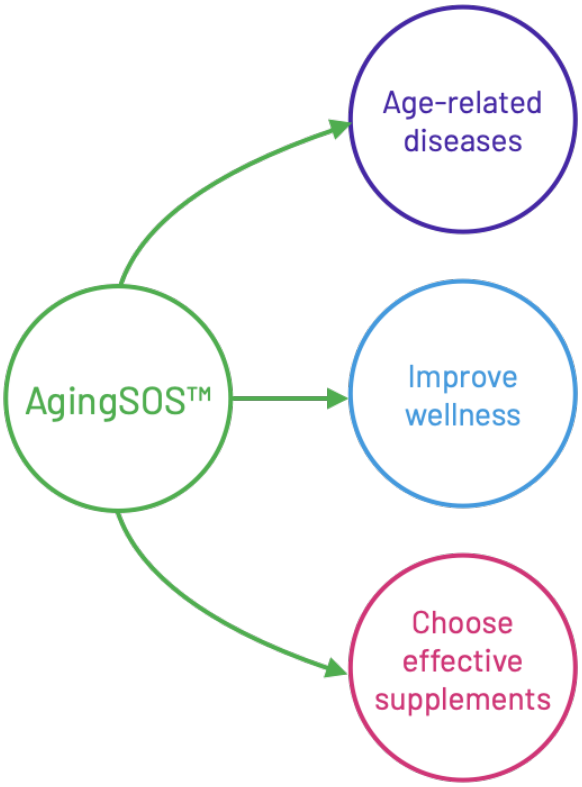
Aging biomarkers can tell you your wellness status, whether you need to, and how you can, intervene to slow down your aging process and reduce your risks of developing age-related diseases to maximize your healthspan and lifespan. AgingSOS® measures molecular and cellular functions as well as modifiable factors in six key categories that are important to aging and age-related diseases:

- Chronic inflammation
- Cellular senescence
- Oxidative stress and antioxidant capacity
- Protein glycation
- Tissue stress and damage
- Micronutrients

We offer some biomarkers to researchers. These are not currently available to consumers.

What AgingSOS™ tells you

- Your overall wellness status, measured by our proprietary W-Index™.
- Whether you are at increased risk of developing age-related diseases.
- Potential solutions to improve your wellness and reduce your disease risk via lifestyle changes and nutritional supplementation.
- Whether you are taking the right kind and the right amount of nutritional supplements.
- Whether your nutritional supplements are providing the desired health benefits.
- How you can potentially improve management of your age-related diseases through nutritional supplements.



Health improvements guided by AgingSOS™

Many middle-aged and senior people, some young adolescents and even young children do have deficiencies or abnormalities that can be revealed by the AgingSOS® biomarker panels. Many of us take some nutritional supplements with the hope to improve health, reduce risks for illness, and/or increase longevity. However, no one knows what each person really needs the most and whether the supplements are effective.

AgingSOS® helps you identify the deficiencies and abnormalities that you need to act upon the most. Its biomarkers are actionable, meaning you can take concrete steps now to correct your deficiencies. These actions include lifestyle changes such as more exercise, more sleep, diet, and biomarker-guided supplementation of nutrients that you cannot get enough from your regular foods.

AgingSOS® allows you to assess the progress you are going to make by retaking the test after concrete actions have been taken. Initiation of actions is a great first step towards your health and longevity, while monitoring your progress or lack of progress by retaking the test on a regular interval is even more critical for your long term health and your longevity. We will recommend the most appropriate time interval for you to retake the test based on your biomarker profile.

AgingSOS® testing methodology

Most biomarkers in the AgingSOS® panels are tested using reagents approved by the federal drug administration (FDA) or the Commission of Europe (CE), while other biomarkers are laboratory developed tests (LDT) that are thoroughly validated for their reproducibility. Client samples are always run contemporaneously with quality control samples on state-of-the-art laboratory equipment for maximum accuracy. However, all tests have a certain degree of variation and test values at the lower end may be more variable.

Interpretation of AgingSOS® results

Test results are reported along with the best available ranges in healthy people, thus enabling meaningful assessment of baselines. Interpretation of testing results are based on data from appropriate patients with relevant diseases. In general, the results are put in four categories with color codes: normal/optimum (green), slightly deficient/elevated (yellow), moderately deficient/elevated (orange) or highly deficient/elevated (red).

The overall health/wellness is measured by our wellness index (W-Index®). Calculation of W-Index® is based on our proprietary formula derived from our extensive database on healthy and unhealthy subjects.

The best W-Index® is 100 points and each biomarker deficiency/elevation would deduct a specific number of points based on the degree of deficiency/elevation. A person with a W-Index® of 55 points or less is considered to have suboptimal health or subhealth, which may be a risk factor of many age-related chronic diseases.

W-Index® range	Health/Wellness status
90 – 100	Excellent
80 – 90	Very good
70 – 80	Fair
60 – 70	Poor
<60	Very poor

It should be noted that the W-Index® is calculated based on the first 17 biomarkers included in our W-Index® Starter panel and may be significantly modified by other biomarkers tested by Jinfiniti or other laboratories or biomarkers and diseases that are not revealed. If you have additional AgingSOS biomarkers tested, you can deduct additional points from your W- Index® shown on your report.

The determination of individual biomarker categories as well as the W-Index® is based on our current knowledge about these biomarkers and is an evolving process as new data continue to accumulate. When significant improvement occurs, your report will be updated on our website. Since you will not be automatically notified of such changes, you may want to periodically check for any potential updates on your report.

Your AgingSOS™ results

Your results breakdown

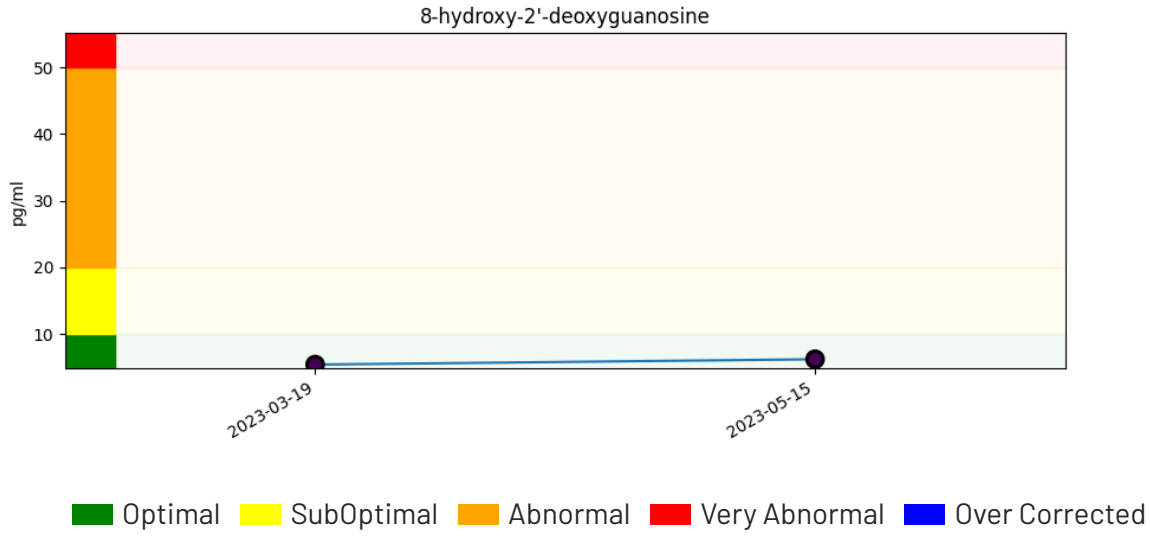
#	Lab	Result	Optimal range	Am I optimized?	Penalty
1	8-hydroxy-2'-deoxyguanosine	6.2 pg/ml	< 10.0 pg/ml	✓	0
2	Alanine aminotransferase (ALT)	43.0 U/L	9.0 - 33.0 U/L	✗	-1.66
3	Albumin	4.6 g/dL	4.1 - 5.5 g/dL	✓	0
4	Alkaline phosphatase (ALP)	44.0 U/L	20.0 - 70.0 U/L	✓	0
5	Circulating NAD	610.0 nM	450.0 - 1500.0 nM	✓	0
6	Creatine Kinase (CK)	317.0 U/L	50.0 - 500.0 U/L	✓	0
7	estimated glomerular filtration rate	110.0 mL/min/ 1.73m2	90.0 - 1000.0 mL/min/ 1.73m2	✓	0
8	Glycated serum proteins (GSP)	184.0 µM	100.0 - 260.0 µM	✓	0
9	high sensitivity C-reactive protein (hs-CRP)	0.2 mg/L	< 1.0 mg/L	✓	0
10	High-density lipoproteins (HDL-C)	52.0 mg/dL	50.0 - 80.0 mg/dL	✓	0
11	Intracellular NAD	67.6 µM	40.0 - 100.0 µM	✓	0
12	Klotho	6.6 ng/ml	5.0 - 30.0 ng/ml	✓	0
13	Low-density lipoproteins (LDL-C)	133.0 mg/dL	70.0 - 130.0 mg/dL	✗	-0.19
14	Reactive oxygen metabolites (ROM)	594.0 CARR U	150.0 - 380.0 CARR U	✗	-6.46
15		2435.0 JPM U	< 750.0 JPM U	✗	-4.8

#	Lab	Result	Optimal range	Am I optimized?	Penalty
	Senescence-associated-β-galactosidase (SA-β-gal)				
16	Sirtuins	6.0 JPM U	6.0 - 12.0 JPM U	✓	0
17	Total antioxidant capacity (TAC)	2191.0 U/L	2200.0 - 3000.0 U/L	✗	-0.04
18	Triglyceride (TRIG)	150.0 mg/dL	40.0 - 150.0 mg/dL	✓	0
19	Uric Acid (UA)	2.8 mg/dL	3.0 - 6.0 mg/dL	✗	-0.2
20	Vitamin D	43.3 ng/dL	50.0 - 100.0 ng/dL	✗	-0.66

Your W-Index score: 86.0

**For every deficiency we detect, points are deducted from your W-Index™ score.*

Your 8-hydroxy-2'-deoxyguanosine result: 6.2 pg/ml



What is 8-OHdG?

Oxidative stress (free radicals) damage different biomolecules including DNA. Guanosine is most susceptible to oxidative stress. Damage of guanosine results in two main modifications: 8-Hydroxy-2′-deoxyguanosine (8-OHdG) or its oxidized form, 8-oxo-7,8-dihydro-2′-deoxyguanosine (8-oxo-dG). These damaged guanosines induced by a DNA damaging agent are rapidly repaired but a fraction of them remain unrepaired. Both 8-OHdG and 8-oxo-dG can be measured in cells, serum and urine.

Oxidative damage of DNA can induce DNA mutations and epigenetic alterations and modify gene expression. Elevated 8-OHdG has been associated with cardiovascular disease, chronic obstructive pulmonary disease (COPD), cancer, thyroid disease, diabetes and gestational diabetes. 8-OHdG increases with age.

8-OHdG has a potent anti-inflammatory effect. It also plays an important role in the DNA demethylation process and regulates gene expression.

What are the causes of elevated 8-OHdG levels?

High oxidative stress is responsible for elevated 8-OHdG levels.

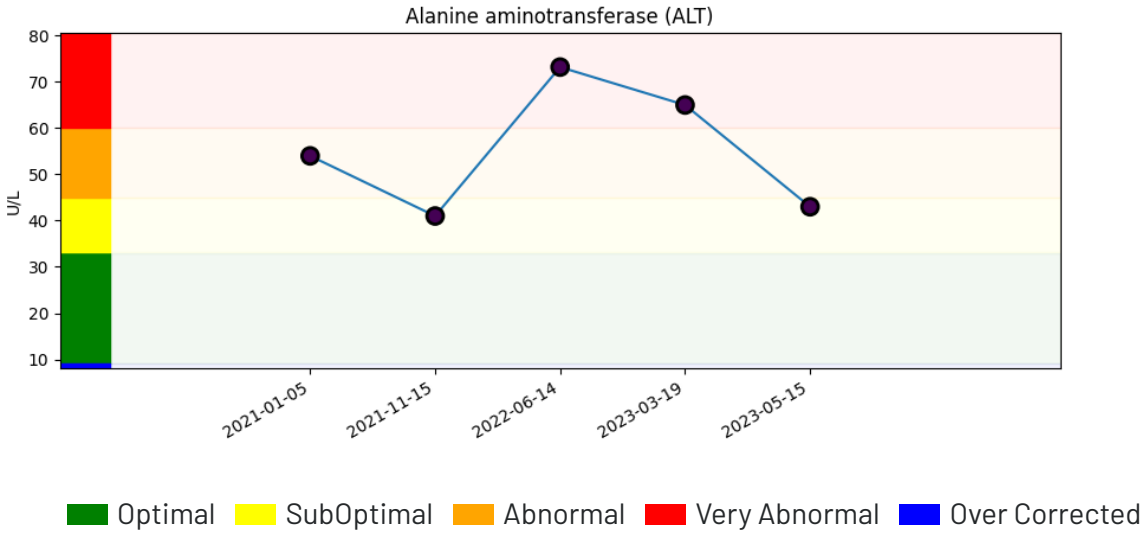
Intervention tips

If your 8-OHdG levels are high, you should reduce oxidative stress by taking more antioxidants from foods and/or supplements. You should also manage the underlying diseases and conditions that can induce higher oxidative stress. Minimizing exposure to xenobiotics, cigarette smoking, stress reduction can help reduce oxidative stress and 8-OHdG. Increased physical activity may also reduce 8-OHdG.

Further reading and references

8-Oxo-2'-deoxyguanosine - Wikipedia

Your Alanine aminotransferase (ALT) result: 43.0 U/L



What is ALT?

Alanine aminotransferase (ALT, also known as SGPT) is one of the most widely tested liver enzymes. The other one is aspartate aminotransferase (AST or SGOT). In healthy persons, these liver enzymes are predominantly contained within liver cells and to a lesser degree in the muscle cells. When the liver is injured or damaged, liver cells spill these enzymes into the blood stream, resulting in elevated levels of AST and ALT in the blood and indicating liver diseases. There are also other enzymes found in the liver, including alkaline phosphatase, gamma-glutamyl transpeptidase (GGT) and 5' nucleotidase. ALT and the other liver enzyme tests are used to assess liver damages from hepatitis, infection, cirrhosis, liver cancer, or other liver diseases. Other factors including medicines, age, gender, diet, body weight, and geographical location can affect ALT results.

The normal range for ALT in blood has been an issue of debate and does vary depending on testing laboratories or medical organizations and the purpose of the assay. In healthy individuals, blood ALT levels can fluctuate 10 to 30% from one day to the next and can fluctuate 45% during a single day, with highest levels observed in the afternoon and lowest level at night. Our test population has a median value of 16 units per liter (U/L) in adults who do not have known liver diseases. This is comparable to the median value of 11 U/L for women and 13 U/L for men in a published report. For disease diagnosis purpose, the cutoff is usually set at a very high value, 63 U/L; however, ALT should be maintained in an optimum range for health management purpose. We recommend an optimum blood ALT level between 14 and 33 U/L.

Elevated ALT increases mortality risk, not only in liver disease but also in non-liver-related ailments, particularly cardiovascular disease. Mortality jumps up by 60% -80% when ALT is twice beyond the higher of the normal range.

Whereas doctors pay more attention to elevated ALT values, lower ALT in blood has been shown to be associated with lower total-body muscle mass, lower baseline fitness, increased frailty and risk of mortality in elderlies and increased risk of all-cause mortality in healthy, middle-aged and elder people. The association between ALT and mortality is inconsistent and seems particularly susceptible to age. ALT is more valuable in predicting mortality in the older population. Extremely low ALT levels appear to indicate a higher all-cause, cardiovascular-related, and cancer-related mortality.

Analysis of over 10,000 non-diabetic subjects of age 21-84 years suggested an upward surge from 21 to 64 years and a discernible steady downward decline around 65 years of age.

What are the risk factors for abnormal ALT?

Elevated ALT levels are indications of abnormal live function or damage, including non-alcoholic fatty liver disease (NAFLD), hepatitis, alcohol-related liver disease, bile duct disorders, autoimmune live disease, drug and medicine (aspirin, Tylenol, Advil, Motrin and others), and other etiology such as smoking, high cholesterol, overweight, sedentary lifestyle and environmental toxins.

Causes for low ALT are not very well known. Malnutrition could be a risk factor for low ALT.

Intervention tips to lower ALT levels

If your ALT test is outside of the normal range, you should consult your doctor who may recommend a confirmatory test and/or additional tests to find out the exact cause for the abnormal finding. There also preventive actions you can take to keep your liver healthy and your ALT level within healthy range. These may include:

- Reduce high cholesterol.
- Have a healthy and balanced diet.
- Exercise regularly and lose excess weight.
- Increase folic acid intake.
- Avoid alcohol, smoking, and environmental toxins.

Intervention tips to raise abnormally low ALT levels

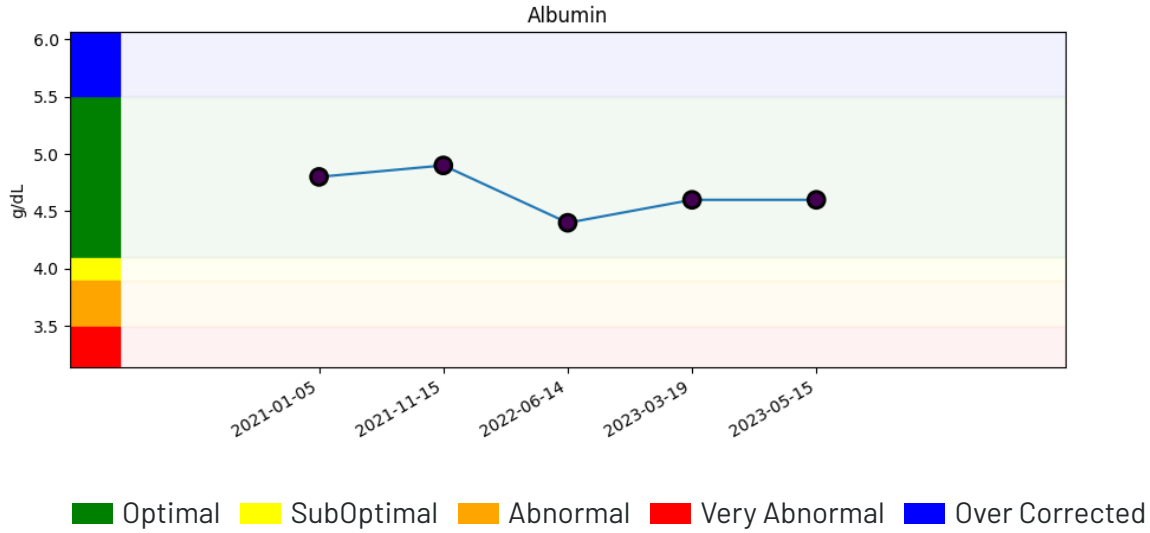
There are no known remedies for rectifying lower than normal levels of ALT at this time because limited research has been devoted to the harmful effect of low ALT in the blood on

health and mortality. Follow general guidelines for healthy lifestyle including balanced diet and exercise.

Further reading and references

https://www.jinfiniti.com/blog/alt_report/

Your Albumin result: 4.6 g/dL



What is albumin?

Albumin is synthesized by the liver and is the most abundant protein in the blood. It is essential for the body to both maintain growth and repair tissues. In healthy people, a blood albumin level of less than 3.5 g/dl is considered deficient. Kidney Disease Outcomes Quality Initiative (KDOQI) guidelines, from the National Kidney Foundation, recommend a blood albumin level of >4.0 g/dl for patients with kidney diseases.

What are the causes of albumin deficiency?

Not eating enough protein is the primary reason for an inadequate albumin level. Inflammation and infection can also reduce albumin level. Possible causes of infections include an infected access, an infected foot, decayed teeth or infected gums or a bladder infection. Examples of chronic inflammations are cancer, arthritis, lupus, diabetes and cardiovascular diseases. Low albumin levels may be caused by liver diseases or other liver problems such as from alcohol, metabolic acidosis, or protein loss as a result of kidney diseases. It has also been shown that serum albumin declines with age.

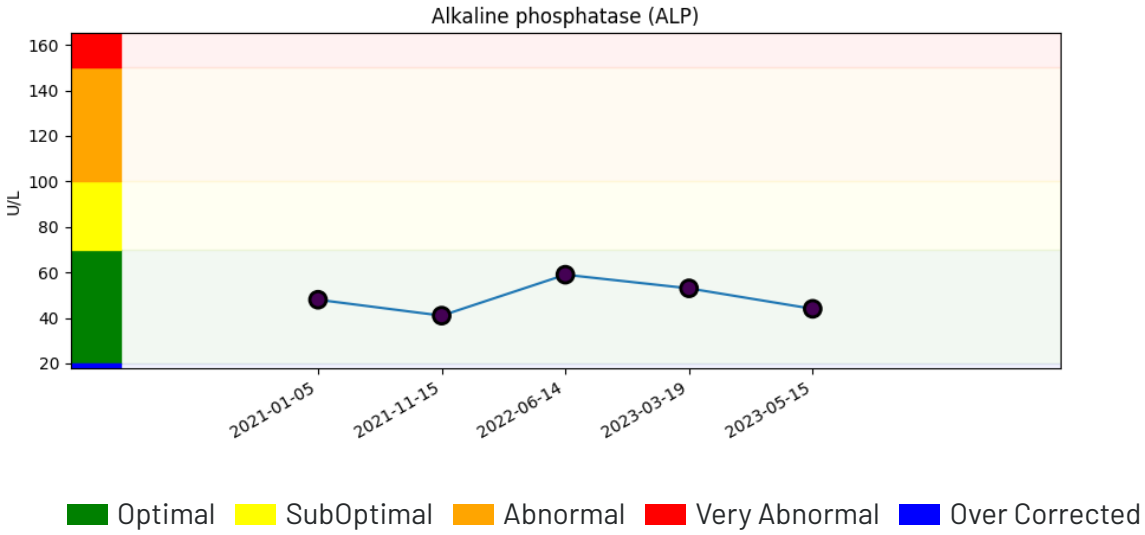
Intervention tips

You may increase your blood albumin level through eating animal foods that contain high quality proteins (e.g., fish, chicken, beef, pork, eggs, milk). Lower quality protein comes from foods such as nuts, beans, vegetables and grain products. You should consult your dietitian who knows how much protein you should eat and also which foods are good sources of protein. You should also consult with your doctor about possible medical issues related to a low blood albumin level. We recommend that you check your blood albumin levels quarterly if it is found to be low. If your albumin level stays low, work with your medical team to determine the cause and come up with a solution.

Further reading and references

https://www.jinfiniti.com/blog/albumin_report/

Your Alkaline phosphatase (ALP) result: 44.0 U/L



What is ALP?

Alkaline phosphatase (ALP) is an enzyme found in several tissues including liver, bone, intestine, kidney, placenta and white blood cells. Damage to these tissues causes the release of ALP into the bloodstream. ALP in blood of healthy adults is mainly from the liver, with most of the rest coming from bones. Elevated blood ALP is commonly caused by liver damage, bone disorders, bile duct and gallbladder diseases.

ALP is used as part of the liver panel to detect liver damages, blocked bile ducts, gallstones or bile duct tumor. It is also often used to detect any condition that affects bone growth or causes elevated activity of bone cells, including osteoporosis, cancers that have spread to the bones, Paget disease that causes malformed bones, or other bone conditions such as vitamin D deficiency. Moderately elevated ALP may indicate other diseases, such as congestive heart failure, ulcerative colitis, Hodgkin lymphoma, and certain bacterial infections.

Blood transfusion or heart bypass surgery may cause temporally low levels of ALP. Zinc deficiency may also cause lower ALP levels. Hypophosphatasia, a rare genetic disorder of bone metabolism, can cause severe, long-term low ALP levels.

The ALP test measures the total ALP levels in the blood. Increase of total ALP may result from ALP specific for certain tissues that can be identified by additional tests. For example, the bone alkaline phosphatase (BAP) is the bone-specific isoform of ALP. Isoenzyme analyses using electrophoresis can find out the source of the elevated ALP (liver, bone, obesity, kidney and cancer).

The normal range of ALP is from 20 to 140 units per liter (U/L) in some recommendations and 44-147 U/L in other recommendations. High levels of ALP are normally seen in pregnant women and in children undergoing growth.

ALP is one of the 10 variables used to quantify biological age with PhenoAge. The reference range for ALP, ALP values greater than 48 U/L are associated with a significantly increased all-cause mortality risk in a meta-analysis of 4 studies that include ~9 million adults. In another meta-analysis that included 24 studies and 147,634 subjects, lowest risk of all-cause death is found in people with ALP values ~50 U/L. Furthermore, mortality risk increases linearly up to 85 U/L and increases at a much greater rate for values greater than 85 U/L. There is evidence that lower ALP may be better within the normal range.

What are the risk factors for abnormal ALP?

Risk factors for elevated ALP include various liver diseases and bone disorders, drug and medicine, and other etiology such as diet, smoking, obesity and environmental toxins. Low blood ALP levels may be caused by a rare genetic disorder called hypophosphatasia that affects bones and teeth, malnutrition/protein deficiency which could be caused by celiac disease, a deficiency in certain vitamins or minerals such as zinc, or certain medications.

Intervention tips

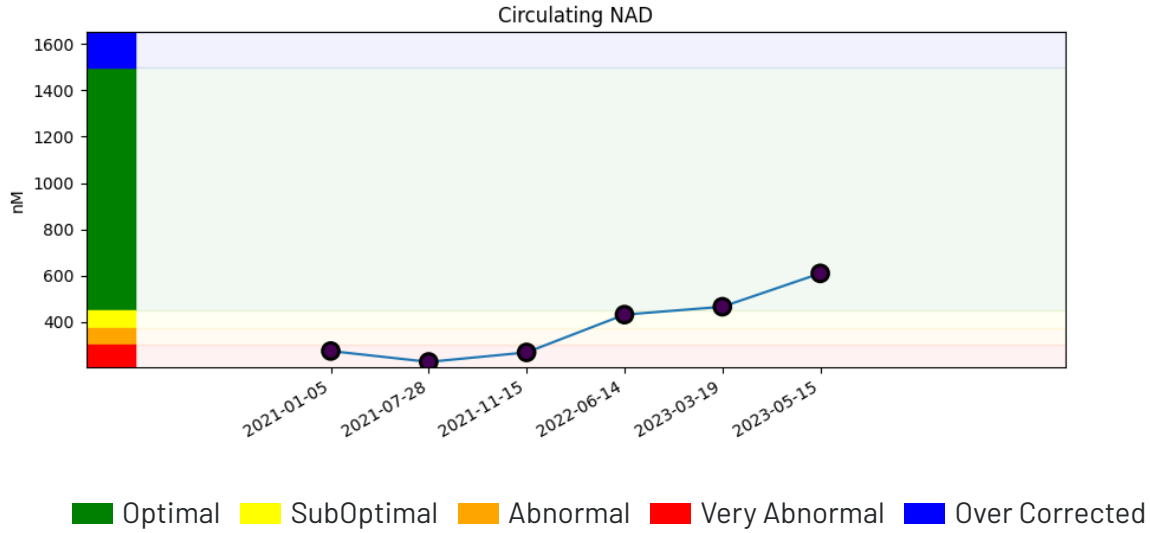
Once doctors identify the cause of elevated ALP, treatment for the cause can bring the ALP level to normal range. Doctors may recommend removal of certain medications that can cause elevated ALP levels such as birth control pills, anti-inflammatory drugs, narcotic drugs. There also preventive actions you can take to keep your liver and bones healthy and your ALP level within healthy range. These may include:

- Foods rich in vitamin D and supplements for vitamin D.
- Exposure to sunlight to increase vitamin D production.
- Reduce high cholesterol.
- Healthy and balanced diet.
- Exercise regularly and lose excess weight.
- Avoid alcohol, smoking, and environmental toxins.

Further reading and references

https://www.jinfiniti.com/blog/alp_report/

Your Circulating NAD result: 610.0 nM



What does this report tell you?

This report reveals the NAD (NAD+ and NADH) level inside your blood cells at the time your blood sample was taken. Your results are compared to the optimum level based on data obtained from young adults. If you have been undergoing NAD supplementation or treatment, your results may indicate the effectiveness of your personal NAD management.

What is NAD?

NAD is a coenzyme found in all living cells. It is essential to life because it catalyzes reactions for more than 400 enzymes including those involved in the production of cellular energy (ATP). NAD is involved in six hallmarks of aging: DNA repair, epigenetic alteration, loss of proteosta-sis, mitochondrial dysfunction, senescence, deregulated nutrient sensing. Without enough NAD, sirtuins are less able to control how our cells function.

NAD declines with age and results in a loss of function and vitality in many age-related diseases. It has been shown that the inflammation and senescence during aging elevates an NAD-degrading enzyme, CD38, which consumes NAD.

How can I raise my NAD to optimal levels?

There are at least three different causes for low NAD levels. Therefore, different people may require different NAD management strategies to achieve optimum NAD levels.

Causes of NAD deficiency

1. Not enough building blocks to make NAD.

   The body creates new NAD from dietary or supplementary sources of tryptophan or niacin. The body can also recycle consumed NAD using a salvage pathway. When cells don't have enough building blocks are available, NAD production is limited. If this is the root cause of low NAD, then providing the building blocks should raise your levels.

   There are many products available on the market. It is important to test your NAD before and a few months after trying these products. Some of these supplements are NMN, NR, Nicotinamide + Ribose, and niacin, and they come in oral or intravenous forms. Everyone has a different metabolism and may require different supplements, doses, and consumption methods.

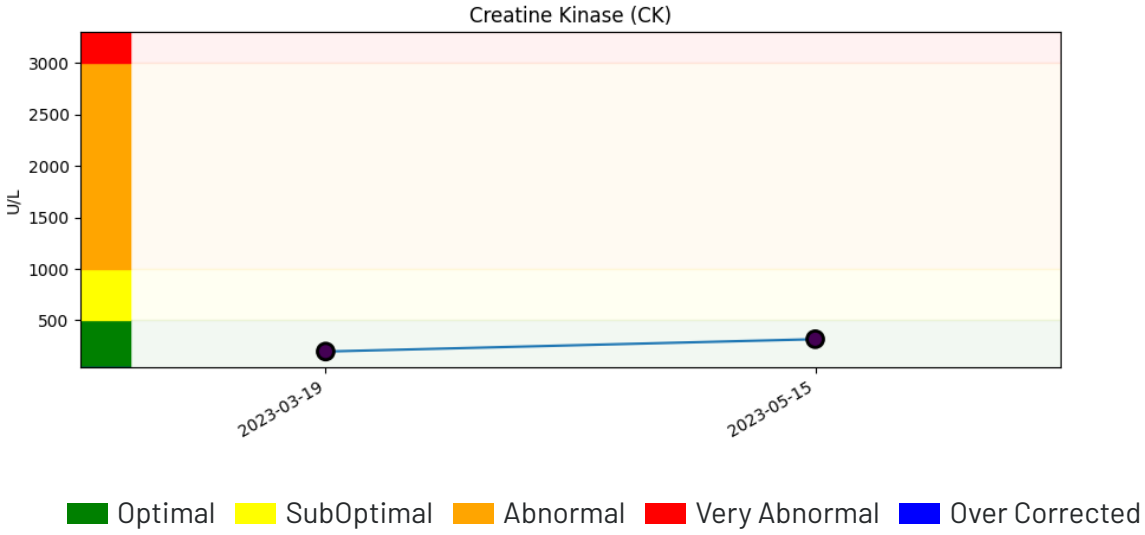
2. Not enough enzyme activity.

   You may have enough building blocks to produce NAD, but if the enzymes that catalyze NAD production aren't active or abundant, then you cannot convert your building blocks into NAD. There is active research on compounds such as SBI-797812 to stimulate NAD catalyzing en-zymes.

3. Too much NAD consumption.

   Enzymes like sirtuins and PARPs are essential for maintaining healthy cells. Sirtuins use NAD to regulate gene expression and how cells function and PARPs aid in DNA repair. As we age, we require more maintenance, which may increase sirtuin and PARP activities thereby depleting NAD. CD38 is an enzyme with lesser-known function, but it increases with age and inflammation, and is thought to be a major cause of NAD depletion. CD38 may be inhibited with apigenin or quercetin supplements.

Your Creatine Kinase (CK) result: 317.0 U/L



What is creatine kinase?

Creatine kinase (CK), also known as creatine phosphokinase, is an enzyme that is found in the skeletal muscle, heart muscle and brain. CK catalyzes the addition of a phosphate group to creatine to become phosphocreatine. This reaction consumes one adenosine triphosphate (ATP) and changes it to adenosine diphosphate (ADP). This is a reversible enzymatic reaction and thus cells can generate ATP from phosphocreatine and ADP. In cells that rapidly consume ATP, especially the skeletal muscle, heart muscle and the brain, phosphocreatine serves as an energy reservoir for rapid buffering and regeneration of ATP as well as for intracellular energy transport by shuttling phosphocreatine.

When any of these tissues are damaged, the CK protein leaks into the bloodstream and CK blood levels can be measured by laboratory tests. The specific isoforms of creatinine kinase (MM, MB and BB) or the total levels of the protein can be analyzed. In the Jinfiniti test, we measure the total CK levels in serum.

In healthy adults, CK levels can vary due to sex, race, and activity level. Individuals with greater muscle mass normally have higher CK levels than those who have less muscle mass. Ranges of CK levels also vary from lab to lab.

What are the causes of elevated or low levels of creatinine kinase?

CK levels below the optimal range may be an indication of low muscle mass and physical activity.

High levels of CK may be an indication of damage to CK-rich tissue due to muscular diseases, injuries, and inflammation. CK blood levels may be elevated in a wide range of clinical conditions including endocrine disorders such as hypothyroidism and several malignant diseases, and use of certain medications such as statins.

Intervention tips

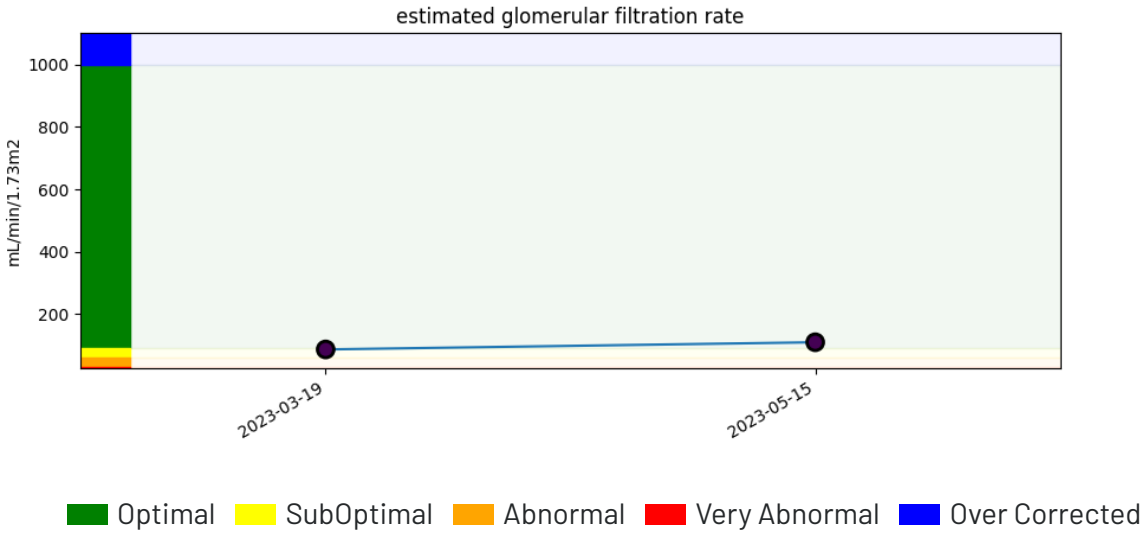
If your ALT test is outside of the normal range, you should consult your doctor who may recommend a confirmatory test and/or additional tests to find out the exact cause for the abnormal finding. There also preventive actions you can take to keep your liver healthy and your ALT level within healthy range. These may include:

- Exercise more to increase muscle mass if CK level is too low.
- Supplementation with creatine monohydrate can also increase CK levels in the blood.
- For elevated CK levels, you should take additional tests for the specific CK isoforms to identify the source of the elevated CK and damaged tissue or tissues.
- Seek medical help.

Further reading and references

Creatine kinase: Cleveland Clinic

Your estimated glomerular filtration rate result: 110.0 mL/min/1.73m2



What is creatinine and eGFR?

Creatinine (CRE) is a spontaneous breakdown compound of phosphocreatine from muscle and protein metabolism. Creatinine is released from muscle at a relatively constant rate and excreted out of the body by the kidneys. Serum level of creatinine is influenced by body mass but is largely determined by the efficiency of glomerular filtration and to a lesser degree the tubular secretion of the kidneys.

Blood creatinine concentrations are used to calculate the estimated glomerular filtration rate (eGFR), which is a clinically important assessment of kidney function. eGFR calculation also takes into consideration of age, sex, and ethnicity of the person.

What are the causes of elevated creatinine and reduced eGFR levels?

Elevated creatinine level does not always indicate a true reduction in GFR. A high level of creatinine may be due to one or a combination of reasons unrelated to glomerular filtration, including increased production of creatinine, presence of substance such as certain medicines that interfere with the assay, decreased tubular secretion, increased ingestion of cooked meat that contains creatinine converted from creatine by heat, excessive intake of protein and/or creatine supplements, intense exercise that causes muscle breakdown, and dehydration.

Diabetes and hypertension are the most common causes of reduced GFR and chronic kidney disease. Other diseases that may affect kidney function include autoimmune diseases such as SLE, bacterial infection of the kidneys, blocked urinary tract, heart failure. Certain drugs used to treat these diseases may have nephrotoxicity. Supplements are usually not well studied for their nephrotoxicity potential and can be causes of reduced GFR. We have found that a significant proportion of people taking large numbers and amounts of supplements have elevated creatinine levels.

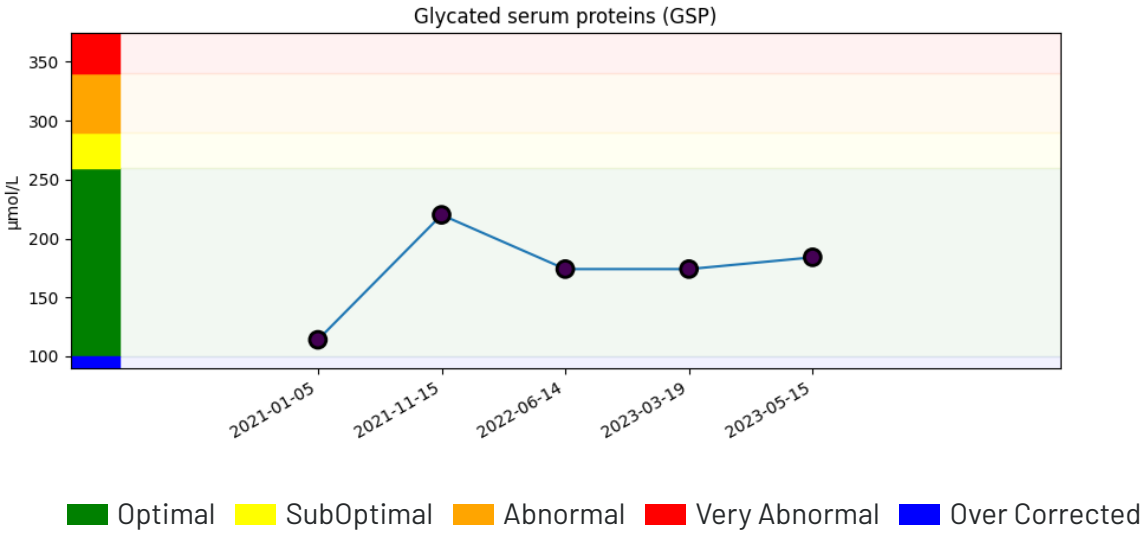
Intervention tips

If your eGFR is abnormal, you should first repeat the test. If the results are confirmed in a subsequent test, you should try to identify the causes of elevated creatinine level to determine whether it likely represents a reduced kidney function. If the elevated creatinine is likely related to reduced renal function, you should consult with a nephrologist or pharmacist to determine what may be the cause of reduced kidney function.

Further reading and references

https://www.jinfiniti.com/blog/alt_report/

Your Glycated serum proteins (GSP) result: 184.0 µM



What is GSP?

Glycation is the non-enzymatic bonding of a sugar molecule to a protein or lipid molecule. Glycated serum proteins (GSP) are proteins that have undergone glycation and circulate in the blood. The vast majority (90%) of GSP consists of glycated albumin. GSP concentration is an indication of the average amount of glucose (glycemia) in the blood over the previous two to three weeks while glycated hemoglobulin, particularly HbA1c, is a measurement of glycemia over the past two to three months. Therefore, GSP closes the information gap between daily glucose measurement and quarterly HbA1c measurement to provide a full spectrum monitoring of glycemic control for patients with diabetes. Furthermore, HbA1c may be of limited value in some situations such as pregnancy, reduced RBC lifespan and hemodialysis. GSP may be altered independent of glycemia by factors that influence albumin metabolism.

GSP are precursors of advanced glycation end-products (AGEs). AGEs contribute to a variety of microvascular and macrovascular diseases. Studies have suggested that measuring GSP and HbA1c provides a better assessment of the long term risk of developing diabetic complications.

What are the risk factors for abnormal GSP?

Diabetes and diabetic complications are the major causes for higher GSP (>290 µmol/L). Borderline GSP values may indicate increased risk of diabetes. Lifestyle factors, like diets

high in sugar, fat and salt, are risk factors for increased GSP levels. Diseases or conditions with altered albumin metabolism or protein levels such as the nephrotic syndrome, cirrhosis, thyroid disease, hyperuricemia, hypertriglyceridemia, smoking, liver, thyroid, and renal diseases can alter GSP level.

Intervention tips

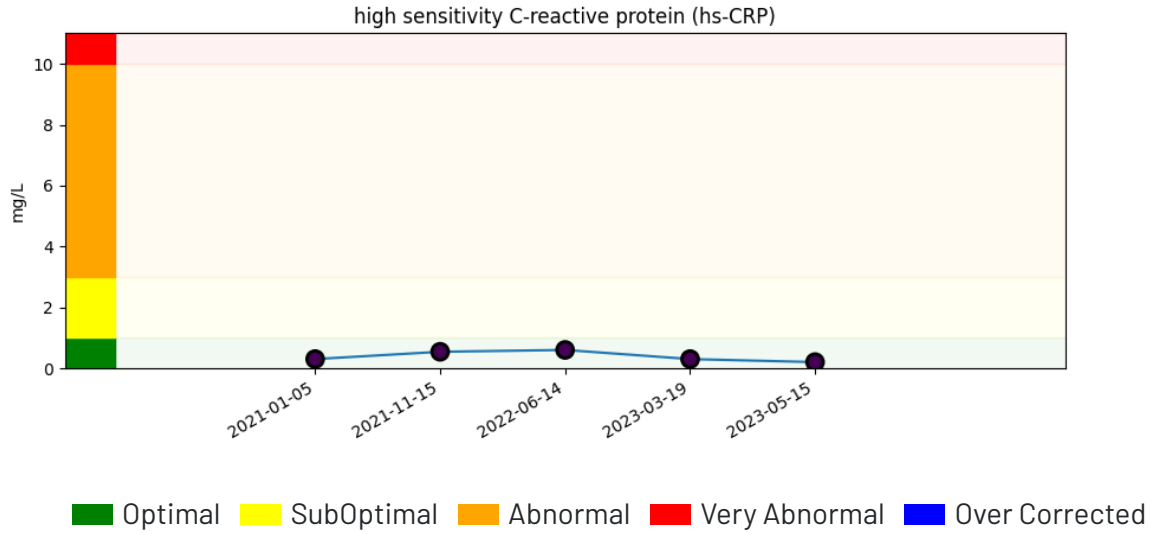
Besides reducing sugar intake, some ways to modify high GSPs include:

- Exercise regularly.
- Lose weight.
- Control carb intake and implement portion control.
- Increase fiber intake.
- Drink water and stay hydrated.
- Choose foods with a low glycemic index, which assesses the body's blood sugar response to foods that contain carbs.
- Reduce stress levels.
- Monitor blood sugar levels.
- Get enough quality sleep.
- Eat foods rich in chromium and magnesium.
- Food and supplements: apple cider vinegar, cinnamon extract, berberine, fenugreek seeds.
- Test for diseases that may alter GSP levels.

Further reading and references

https://www.jinfiniti.com/blog/gsp_report/

Your high sensitivity C-reactive protein (hs-CRP) result: 0.2 mg/L



What are CRP and hs-CRP?

C-reactive protein (CRP) is a substance that the liver makes in response to inflammation. The C-reactive protein test measures the amount of this protein in the blood. The test can help to diagnose acute and chronic conditions that cause inflammation. A wide variety of inflammatory conditions can cause elevated CRP levels, including infection, organ and tissue injury, cancer, obesity, autoimmune conditions, pericarditis. Very high CRP levels (>350mg/L) are almost always a sign of a serious underlying medical condition, likely a severe infection or a poorly controlled autoimmune disease or severe tissue damage.

The high sensitivity CRP (hs-CRP) test is different from the CRP test. The hs-CRP test detects lower levels of CRP in the bloodstream (0-10mg/L), while the CRP test measures levels in the 10-1,000mg/L range. The hs-CRP test is used to evaluate chronic inflammation and a person's risk of developing diseases and conditions such as cardiovascular disease, atherosclerosis, diabetes and sedentary lifestyle.

There is currently no definitive standard for CRP blood levels, and guidelines vary. As a general rule, the following thresholds apply:

- Normal levels are below 1 mg/L.
- Slightly elevated levels (1 - 3 mg/L) indicate a moderate risk of developing cardiovascular disease and perhaps other diseases.
- Moderately elevated levels (3 - 10 mg/L) are usually result from chronic conditions such as diabetes, hypertension, obesity, tobacco smoking and sedentary lifestyle.
- Highly elevated levels (10 - 100 mg/L) are usually due to significant inflammation from an infectious or non-infectious cause.

- Extremely high levels (above 100 mg/L) are almost always a sign of severe bacterial, fungal or viral infection, and sometimes cancer.

What are the most likely cause of elevated CRP?

A huge range of diseases and conditions can raise CRP levels, making the determination of the exact cause of its elevation almost impossible by looking at CRP levels alone. However, the causes fall into the following categories:

- Viral, bacterial or fungal infection including COVID-19.
- Injury, surgery or wound.
- Cancer.
- Chronic diseases: diabetes, obesity, hypertension, cardiovascular disease, arthritis, pericarditis and autoimmune diseases.
- Lifestyle conditions: overweight, sedentary lifestyle.
- Estrogen levels: Estrogen-based medications such as birth control pills and hormone replacement medications.
- Pregnancy: especially during the later stages.

Intervention tips

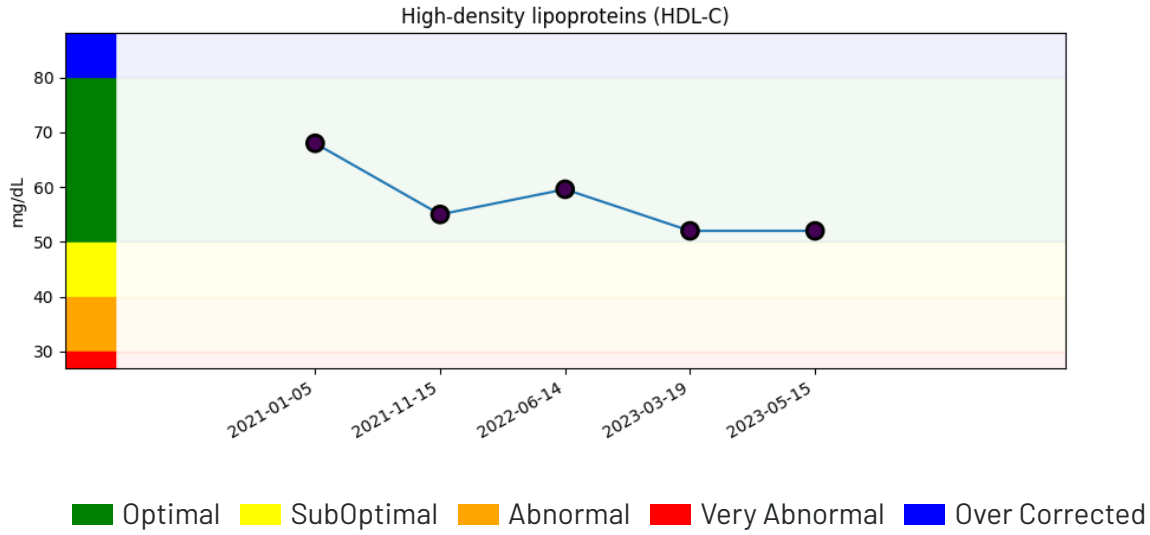
You should consult a doctor and find out the cause if you have high levels of CRP (>10mg/L). For slightly (1-3mg/L) to moderately elevated levels (3-10mg/L), you should monitor it changes over time and potentially take actions to reduce the levels. There are many different supplements that can help reduce chronic inflammation and the commonly used supplements include curcumin contained in turmeric, alpha-lipoic acid, fish oil, ginger, resveratrol, spirulina, S-adenosylmethionine, zinc, green tea, frankincense, cat's claw, capsaicin, andrographis and many others. Anti-inflammatory supplements do not work for everyone and you should find out which one(s) work the best for you. In almost all cases, supplements take time to reverse inflammation.

Medications may be needed to reduce inflammation in the body when it is highly elevated. Specific nonsteroidal anti-inflammatory drugs (NSAIDs) and some cholesterol-reducing medicines (statins) and may help lower CRP levels.

Further reading and references

https://www.jinfiniti.com/blog/hscrp_report/

Your High-density lipoproteins (HDL-C) result: 52.0 mg/dL



What is HDL?

Unlike the "bad" low-density lipoprotein particles (LDL) which deliver fat molecules to cells, HDL is the "good" cholesterol that removes extra cholesterol from cells and reduces plaque buildup in your arteries and carries extra cholesterol back to your liver where it is expelled. The good balance between HDL and LDL helps reduce your risk of atherosclerosis, heart disease, heart attack and stroke.

Our blood test reports HDL-C, the average amount of cholesterol estimated to be contained within HDL particles.

Risks for low HDL

- Obesity.
- Sedentary lifestyle.
- Type 2 diabetes.
- Unhealthy diet.
- Inflammation.
- Smoking.

Intervention tips for increasing HDL

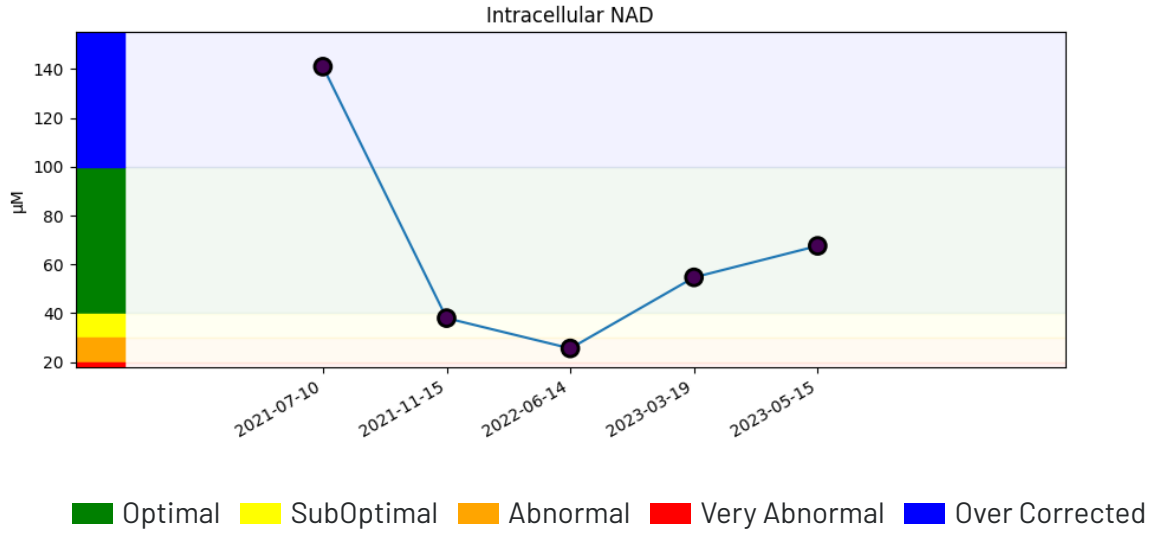
Many natural ways and medications to lower your bad cholesterol (LDL) levels can also increase your good cholesterol (HDL) levels high. Lowering LDL can improve HDL/LDL ratio and reduce disease risk.

- Healthy diet.
  - Avoid high saturated and trans fats, cholesterol, or simple carbs.
  - Eat monounsaturated fats from foods like olives and olive oil, canola oil, nuts, pecans, and avocados
  - Use polyunsaturated fats, especially omega-3s.
  - Eat more soluble fiber and probiotics to promote gut health.
  - Consider plant sterols and stanols (plant cholesterol) naturally found in vegetable oils.
- Cholesterol-lowering supplements.
  - Omega-3 supplements.
  - Niacin (vitamin B3).
  - Psyllium: a form of soluble fiber.
  - Coenzyme Q10.
- Lifestyle changes.
  - No smoking.
  - Regular exercise.
  - Lose weight.
  - Reduce alcohol consumption.
- Control high blood pressure and diabetes.
- Medications.
  - Statins to reduce cholesterol production.
  - Niaspan: a niacin-based prescription drug with high potency.
  - Zetia to lower absorption of dietary cholesterol.
  - Probucol and vitamin E to prevent LDL oxidation and atherosclerosis.

Further reading and references

https://www.jinfiniti.com/blog/hdl_report/

Your Intracellular NAD result: 67.6 µM



Optimal

This is the optimal range for intracellular NAD, which is seen in about 75% of teenagers. The upper limit of intracellular NAD is unknown but levels around 30-50uM are commonly seen in both young and old people.

Suboptimal

IC-NAD levels in this range are considered suboptimal. Less than 25% of young people have these levels or lower.

Abnormal

Levels in this range are considered moderately deficient in NAD. A small percentage of young people have IC-NAD levels in this range.

Very Abnormal

Individuals with IC-NAD levels below this threshold are considered to be severely deficient in NAD. Very few young people have these low levels, while some 20% of older people are severely deficient in NAD.

Over corrected

It is unknown whether icNAD level over 100uM is beneficial or harmful.

What does this report tell you?

This report reveals the NAD (NAD+ and NADH) level inside your blood cells at the time your blood sample was taken. Your results are compared to the optimum level based on data

obtained from young adults. If you have been undergoing NAD supplementation or treatment, your results may indicate the effectiveness of your personal NAD management.

What is NAD?

NAD is a coenzyme found in all living cells. It is essential to life because it catalyzes reactions for more than 400 enzymes including those involved in the production of cellular energy (ATP). NAD is involved in six hallmarks of aging: DNA repair, epigenetic alteration, loss of proteostasis, mitochondrial dysfunction, senescence, deregulated nutrient sensing. Without enough NAD, sirtuins are less able to control how our cells function.

NAD declines with age and results in a loss of function and vitality in many age-related diseases. It has been shown that the inflammation and senescence during aging elevates an NAD-degrading enzyme, CD38, which consumes NAD.

Intracellular vs circulating NAD

The NAD test with dried blood spots on filter paper measures NAD inside all blood cells, both white and red cells. We call it intracellular NAD or icNAD.

We, at JPM, also offer another NAD test called **circulating NAD** as part of the AgingSOS™ longevity test panel (https://www.jinfiniti.com/products/agingsos/). Circulating NAD is secreted by cells all over the body into the blood circulation and it is measured in plasma or serum samples. Although intracellular and circulating NAD do show good correlations in most people, major differences are observed in many people. It is therefore useful to test both intracellular and circulating NAD to gain a complete picture of your NAD status.

How can I raise my NAD to optimal levels?

There are at least three different causes for low NAD levels. Therefore, different people may require different NAD management strategies to achieve optimum NAD levels.

Causes of NAD deficiency

1. Not enough building blocks to make NAD.

   The body creates new NAD from dietary or supplementary sources of tryptophan or niacin. The body can also recycle consumed NAD using a salvage pathway. When cells don't have enough building blocks, NAD production is limited. If this is the root cause of low NAD, then providing the building blocks should raise your levels.

There are many products available on the market. It is important to test your NAD before and after trying these products. Some of these supplements are NMN, NR, Nicotinamide + Ribose, and niacin, and they come in oral or intravenous forms. Everyone has a different metabolism and may require different supplements, doses, and consumption methods.

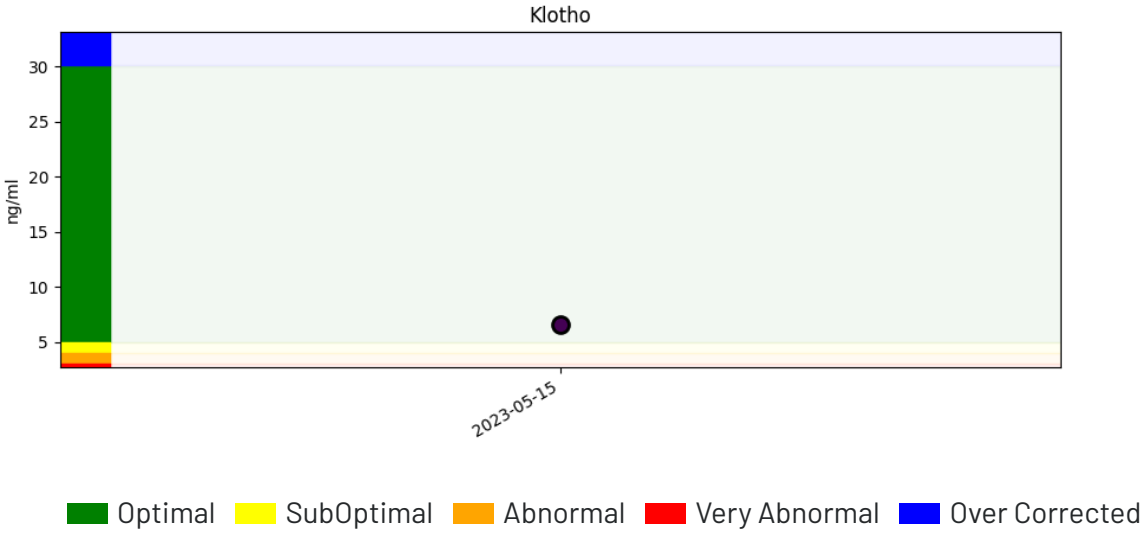
2. Not enough enzyme activity.

   You may have enough building blocks to produce NAD, but if the enzymes that catalyze NAD production aren't active or abundant, then you cannot convert your building blocks into NAD. There is active research on compounds such as SBI-797812 to stimulate NAD catalyzing enzymes.

3. Too much NAD consumption.

   Enzymes like sirtuins and PARPs are essential for maintaining healthy cells. Sirtuins use NAD to regulate gene expression and how cells function and PARPs aid in DNA repair. As we age, we require more maintenance, which may increase sirtuin and PARP activities thereby depleting NAD. CD38 is an enzyme that increases with inflammation, senescence, and age, and is thought to be a major cause of NAD depletion. CD38 may be inhibited with apigenin or quercetin supplements.

Your Klotho result: 6.6 ng/ml



What is Klotho?

Klotho is a transmembrane protein encoded by the KL gene. Klotho is also cleaved and released into blood circulation. Three isoforms of klotho proteins (α-klotho, β-klotho, and γ-klotho) are made through alternative splicing of the Klotho protein. α-klotho activates FGF23; β-klotho activates FGF19 and FGF21; and γ-klotho has undefined function. α-klotho is primarily expressed in the kidney and β-klotho is primarily expressed in liver but also found in the kidney. The Jinfiniti Klotho assay measures α-klotho protein levels in serum.

The name for Klotho comes from one of the Moirai or Fates in Greek mythology, Klotho or Clotho, who spins the thread of human life, because Klotho plays a critical role in aging and longevity. Klotho levels decline with age.

Klotho is a novel β-glucuronidase capable of hydrolyzing steroid β-glucuronides and provides some control over insulin sensitivity. α-klotho binds to FGF23 and changes cellular calcium homeostasis, by increasing the expression and activity of TRPV5, which decreases phosphate reabsorption in the kidney, and by reducing the expression and activity of TRPc6, which decreases absorption from the intestine. α-klotho also increases calcium reabsorption in the kidney by stabilizing TRPV5. α-klotho is also involved in potassium metabolism, angiogenesis, adipogenesis and glucose metabolism..

α-klotho is implicated in many biological processes although the mechanism of action is still not fully understood. It reduces endothelial dysfunction and atherosclerosis by suppressing oxidative stress and inflammation. Klotho is also involved in calcium, phosphate and potassium metabolism, angiogenesis, adipogenesis, insulin signaling, glucose metabolism, Vitamin D metabolism and mineral-ion homeostasis, learning and memory, muscle regeneration.

Reduced α-klotho or FGF23 can result in impaired excretion of phosphate from the kidney and consequently hyperphosphatemia, leading to a premature aging phenotype in mice. Lower circulating α-klotho levels in old adults are associated with increased frailty and all-cause mortality. Over-expression of klotho in mice extended lifespan by 19%-31%. Gene therapy to increase Klotho in humans has also shown promising health benefits.

Benefits of increased Klotho may include

- Protects against kidney diseases.
- Protects against cardiovascular disease.
- Improves cognition.
- Improves bones.
- Protects against COPD.
- Increases lifespan.
- Improves athletic performance.
- Prevents cancer.
- Improves vision.

What do abnormal Klotho levels mean?

Reduced Klotho levels have been observed in patients with chronic kidney failure (CKF) and associated degenerative processes including arteriosclerosis, osteoporosis, and skin atrophy.

Lower serum Klotho levels are associated with risk factors and prevalence of cardiovascular disease and heart failure. Low Klotho levels also contribute to the pathophysiology of neuropsychiatric disorder. Klotho levels are reduced by psychological stress and depression, inflammation, oxidative stress, and angiotensin II.

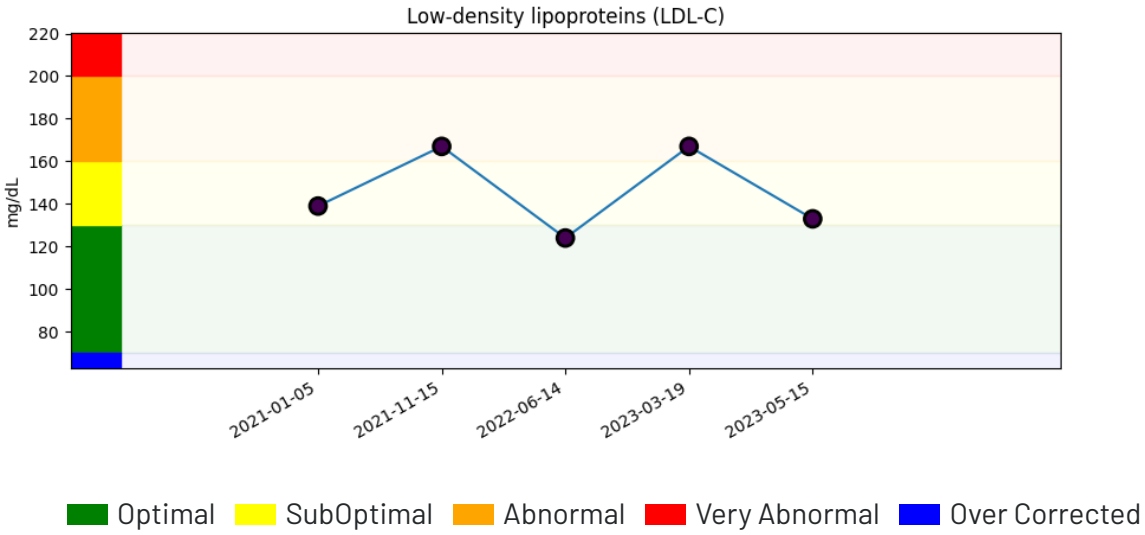
Intervention tips

- Physical activity can increase Klotho levels.
- Insulin increases cleavage of Klotho and serum levels.
- Cordyceps increases expression of Klotho.
- Manage inflammation, oxidative stress and senescence.
- Lifestyle changes to reduce stress and depression.
- Over-expression of Klotho via gene therapy.

Further reading and references

Klotho: Become Smarter And Live Longer With 50+ Ways To Increase Klotho

Your Low-density lipoproteins (LDL-C) result: 133.0 mg/dL



What is LDL?

The liver produces cholesterol that your body needs and packages fat molecules (cholesterol, phospholipids, and triglycerides) in very low-density lipoproteins (VLDL). As VLDL transports fat to cells around your body, VLDL becomes low-density lipoproteins (LDL), the more dense particle. LDL delivers fat wherever it is needed. LDL is the "bad" cholesterol that are prone to damage by free radicals through a process called oxidization within the walls of arteries. Oxidized LDL is even more harmful to health, raising the risk of atherosclerosis, heart attack or stroke.

Our blood test reports LDL-C, the average amount of cholesterol estimated to be contained within LDL particles. LDL-C is calculated by measuring total cholesterol, HDL-C, and triglycerides. For patients with triglycerides more than 400, LDL-C test is not accurate. Other conditions such as severe cirrhosis also make the test inaccurate. For persons with high LDL-C, measuring oxidized LDL, a more expensive test, can provide better estimate for disease risk.

Risks associated with high LDL levels

- Coronary artery disease.
- Peripheral artery disease.
- Heart disease.
- Stroke.

Intervention tips for lowering LDL

There are many natural ways to lower your cholesterol levels when they are borderline high but medications may be required when your cholesterol levels are high.

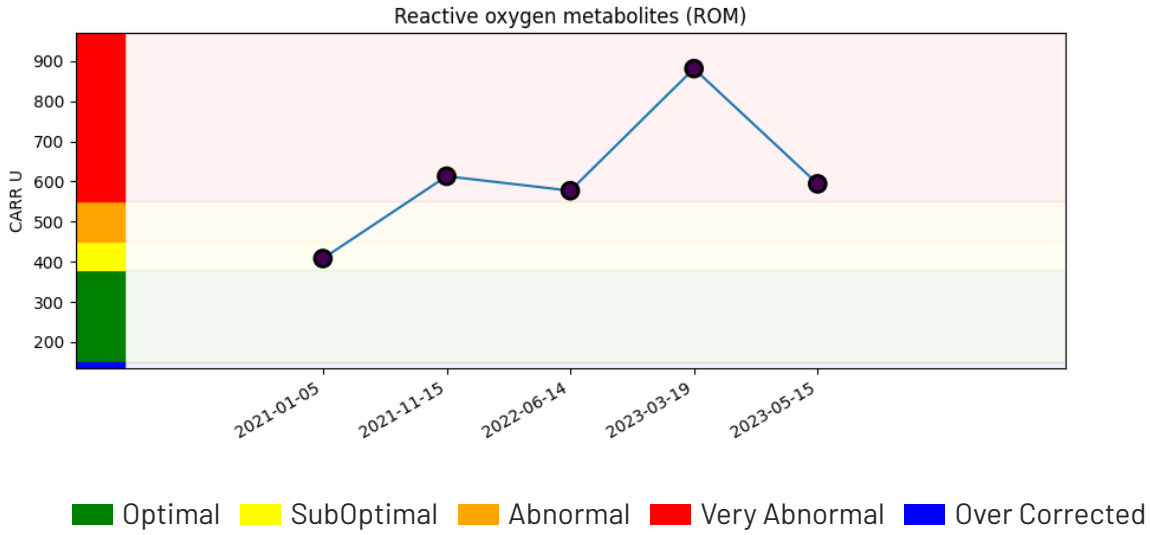
If your cholesterol is high, please consult with a physician to choose the best intervention for you.

- Healthy diet.
  - Avoid high saturated and trans fats, cholesterol, or simple carbs.
  - Eat monounsaturated fats from foods like olives and olive oil, canola oil, nuts, pecans, and avocados
  - Use polyunsaturated fats, especially omega-3s.
  - Eat more soluble fiber and probiotics to promote gut health.
  - Consider plant sterols and stanols (plant cholesterol) naturally found in vegetable oils.
- Cholesterol-lowering supplements.
  - Omega-3 supplements.
  - Niacin (vitamin B3).
  - Psyllium: a form of soluble fiber.
  - Coenzyme Q10.
- Lifestyle changes.
  - No smoking.
  - Regular exercise.
  - Lose weight.
  - Reduce alcohol consumption.
- Control high blood pressure and diabetes.
- Medications.
  - Statins to reduce cholesterol production.
  - Niaspan: a niacin-based prescription drug with high potency.
  - Zetia to lower absorption of dietary cholesterol.
  - Probucol and vitamin E to prevent LDL oxidation and atherosclerosis.

Further reading and references

https://www.jinfiniti.com/blog/ldl_report/

Your Reactive oxygen metabolites (ROM) result: 594.0 CARR U



Oxidative stress

Oxidative stress (OS) is a phenomenon or physiological state caused by the imbalance between free radicals and antioxidants in your body. Free radicals, all called reactive oxygen species (ROS) or reactive oxygen metabolites (ROM) are oxygen-containing molecules with an uneven number of electrons, allowing them to easily react with other molecules. ROS are constantly produced by mitochondria in your cells as part of the physiological processes to produce energy and some pathological conditions. They can play, and in fact they do play, several physiological roles (i.e., cell signaling). Several biological functions, such as like protein phosphorylation, apoptosis, immunity, and differentiation, are all dependent on a proper and low level of ROS. However, ROS production can be greatly increased by environmental stressors (UV, ionizing radiations, pollutants, and heavy metals) and xenobiotics (antiblastic drugs). ROS are detoxified by antioxidants such as vitamin C, vitamin E, flavonoids, and polyphenols from your foods or supplements. Excessive production of ROS and/or insufficient intake or detoxifying antioxidants cause the imbalance and. Excessive ROS are harmful to your body because they damage your cell's DNA, proteins, and lipids, causing cell and tissue damage. Oxidative stress is one of the most important underlying causes of aging and aging-related diseases.

What is ROM?

Reactive metabolites (ROM), reactive oxygen species (ROS), or sometimes simply called oxidants, comprise a number of oxygen-containing molecules such as superoxide radicals

(O2•–), hydrogen peroxide (H2O2), hydroxyl radicals (•OH), and singlet oxygen (1O2). ROS are natural byproducts of oxygen metabolism in the mitochondria. At low concentrations, ROS help fight pathogens and synthesize cellular structures. ROS can play an important role in some cell signaling pathways. When ROS production is too high, they can cause severe damages to DNA, RNA, lipids, and especially proteins and cell membrane. A large body of evidence shows that oxidative stress can be responsible, with different degrees of importance, for the onset and/or progression of many diseases (i.e., cancer, diabetes, metabolic disorders, atherosclerosis, and cardiovascular diseases).

It is widely known that large amounts of oxidants accelerate aging. However, a recent study has shown that oxidants may have some positive functions such as slowing down cell aging, raising the possibility that some oxidants, at adequate levels, may play a role in health and longevity.

Various individual ROS can be measured by laboratory test. The ROM test measures all reactive oxygen metabolites and is therefore a great assessment for the overall status for oxidative stress.

What are the risk factors for high ROM?

Causes of high ROM

- High fat and sugar diet.
- Alcohol.
- Chronic inflammation.
- Smoking.
- UV.
- Ionizing radiation.
- Pollutants.
- Heavy metals.

Intervention tips

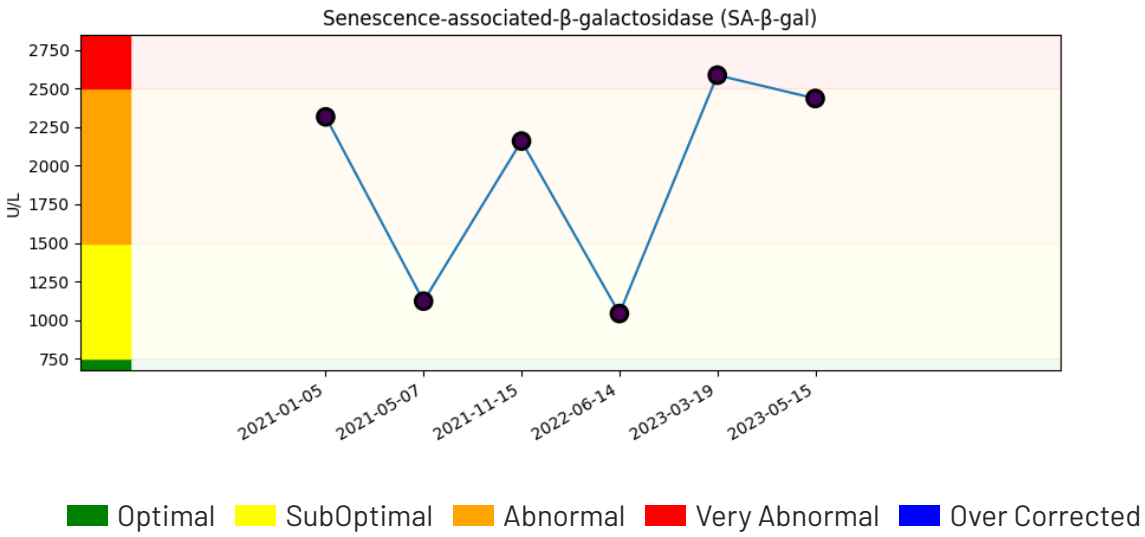
How to lower oxidative stress

- Healthy diet: low fat and sugar.
- Eat a diet rich in antioxidants.
- Caloric restriction and intermittent fasting.
- Exercise.
- Avoid environmental stress.
- Supplements can increase enzymes with ROM-neutralizing functions: resveratrol, turmeric, green tea, grape seed, cocoa, chokeberry.
- Antioxidant supplements: vitamin C, vitamin E, glutathione, and more.

Further reading and references

https://www.jinfiniti.com/blog/roms_report/

Your Senescence-associated-β-galactosidase (SA-β-gal) result: 2435.0 JPM U



What is SA-β-gal?

SA-β-gal is an enzyme and considered the best biomarker for cellular senescence, which is the permanent arrest of cell growth. Senescence increases as we age and is one of the most important hallmarks of aging. Senescent cells are "zombie" cell that do not work properly, thereby negatively impacting health. Senescent cells are characterized by morphological and metabolic changes, chromatin reorganization, altered gene expression, and a pro-inflammatory phenotype known as the senescence-associated secretory phenotype (SASP). SASP proteins secreted by senescent cells, especially inflammatory cytokines, play a causative role in aging and all age-related diseases such as cancer, diabetes, atherosclerosis, osteoarthritis and infectious diseases.

Senescent cells may play a protective role because the right amount of inflammation and senescence signal for regeneration factors, and it plays a role in contributing to normal development, cell plasticity and tissue repair, as a dynamic and tightly regulated cellular program.

While senescence can be measured in cells and tissues by a variety of biomarkers and methodologies, Jinfiniti Precision Medicine offers the first commercially available senescence test for serum or plasma. The senescence biomarker measured in blood should reflect senescence level in the whole body or pathological sites. While the precise cutoff values remain to be determined, the recommended cutoffs are based on analyses of several thousand persons without obvious diseases as well as thousands of patients with various diseases and conditions including cancer and diabetes.

Risk factors and how senescent cells cause harm

Cellular senescence can be triggered by a number of cellular stresses, including oxidative stress, telomere dysfunction, non-telomeric DNA damage, epigenetic repression of the INK4a/ARF locus, and oncogenic activation among others. Poor lifestyle choices, like lack of exercise and overeating, can contribute to cellular senescence.

Intervention tips

A healthy lifestyle including exercise can help prevent the formation of senescent cells. Likewise, intermittent fasting has been shown in animal models to promote autophagy, or cellular "self-eating" that helps clear out damaged cellular components including mis-folded proteins.

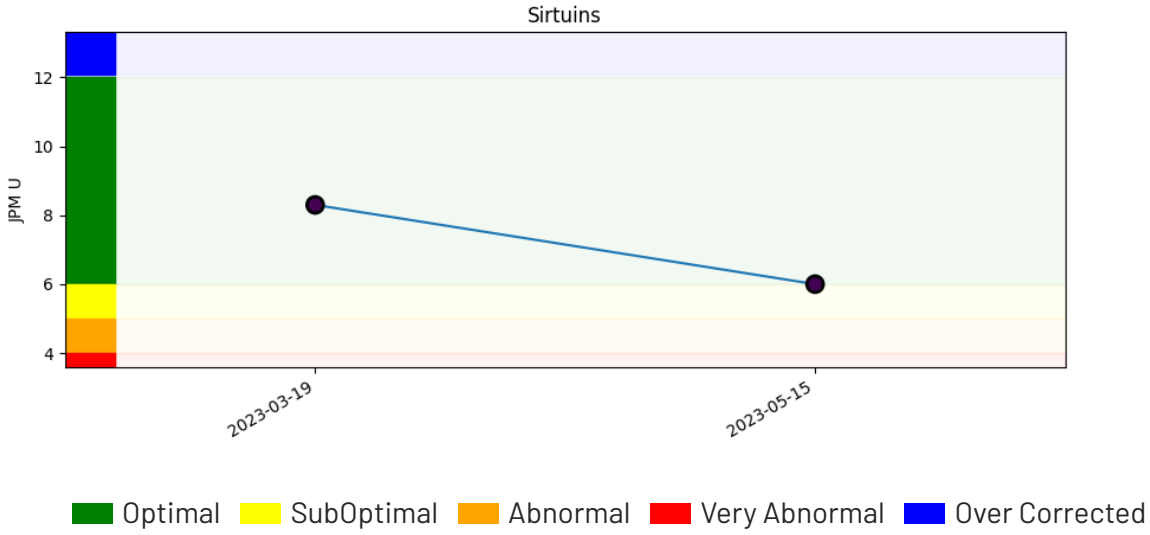
Senolytics are drugs that can reduce or eliminate senescent cells. A number of flavonoids, particularly fisetin, have been shown to have senolytic activity. Emerging natural compounds have been discovered to be effective senolytic agents, such as quercetin, fisetin, piperlongumine and the curcumin analog. The combination of dasatinib (an anti-cancer drug) plus quercetin (a flavonoid supplement), have been shown to decrease senescent cells in humans.

The SA-β-galactosidase test gives you a picture of your cellular senescence and will help you and your medical professional evaluate your level of senescence.

Further reading and references

https://www.jinfiniti.com/blog/sa-beta-gal_report/

Your Sirtuins result: 6.0 JPM U



What is SIRT?

Sirtuins (SIRT) are a family of seven proteins (SIRT1-7) that possess deacetylase, ADP-ribosyl transferase, and/or other enzymatic activities. SIRT-mediated deacetylation uses NAD+ as substrate and breaks down NAD+ to nicotinamide (NAM). The NAD+ dependance of sirtuins provides a link between sirtuin activity and the cellular energy status via the concentrations of NAD+, NADH and NAM.

The Jinfiniti SIRT assay is a direct measurement of the deacetylase activity of primarily SIRT1 and SIRT3 in the presence of NAD+. The deacetylase activity depends on the levels of full-length proteins and their post-translational status such as phosphorylation.

SIRT1 is primarily located in the nucleus and cytoplasm and detectable in serum and plasma. SIRT1 has profound impacts on multiple biological processes including metabolic regulation, autophagy, cellular senescence, apoptosis, insulin resistance and glucose metabolism, lipid metabolism, oxidative stress, inflammation, telomere length, and aging. A lot of research suggests that sirtuin activity extends healthspan and lifespan.

SIRT1 deacetylates histones, chromatin-associated proteins that condense DNA into compact structures and play essential roles in the maintenance of chromosome conformation and regulation of gene expression.

SIRT1 can directly deacetylate and therefore affects the activity of several transcription factors or co-factors including tumor suppressors like P53 and FOXO, heat shock proteins, hypoxia-inducible factors, and NF-κB. SIRT1 also deacetylates PGC-α and ERR-α complex, transcription factors essential to metabolic regulation. It may increase insulin sensitivity.

SIRT1 directly deacetylates autophagy-related protein (ATG) and stimulates autophagy. This is the pathway that cells use to respond to reduced nutrients during caloric restriction. It also deacetylates liver kinase B1.

SIRT1 expression in peripheral blood is significantly lower in individuals with depression than healthy individuals and SIRT1 gene variants are associated with major depressive disorder. SIRT1 appears to be involved in the pathogenesis of addiction, possibly linked to the mechanism of action of NAD in treating addictions.

SIRT1 expression is regulated at the transcriptional and post-transcriptional levels. Hypermethylation of SIRT1 gene leads to downregulation of the SIRT1 gene expression. E2F1, FOXO3a and C-MYC proteins promote SIRT1 transcription, while p53 and hypermethylin cancer 1, repress SIRT1 transcription, both providing a negative feedback loop to keep SIRT1 expression at the steady level. SIRT1 is down-regulated as part of the acute inflammatory response and in inflammatory diseases. Some anti-inflammatory drugs exert their function by up-regulating SIRT1 expression.

SIRT1 activity is influenced by post-translational modifications and many different binding proteins. The best known is AMPK, the energy sensor. AMPK can increase the NAD synthesis enzyme and indirectly increase SIRT1 activity. More importantly, APMK directly mediates SIRT1 phosphorylation and promotes SIRT1 deacetylase activity.

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SIRT3 is a deacetylase of mitochondrial proteins and plays an important role in the regulation of multiple metabolic proteins including isocitrate dehydrogenase of the TCA cycle. It protects against oxidative stress and insulin resistance and fatty liver.

Some trade-offs may occur in certain situations when sirtuin levels are too high. For example, SIRT1 may have pro-inflammatory effects in multiple sclerosis and rheumatoid arthritis, while it usually has anti-inflammatory properties. Although SIRT1 has tumor-suppressing functions and promotes DNA damage repair, over-expression of SIRT1 may have the potential to increase certain types of cancers by inhibiting DNA repair enzymes.

What do abnormal SIRT levels mean?

Low SIRT1 protein levels may be related to many diseases and subhealth conditions including diabetes, obesity, insulin resistance, leptin resistance, cardiovascular diseases, neurodegeneration, metabolic syndrome, liver diseases, thyroid disease, cancer, chronic obstructive pulmonary disease, periodontal disease, ocular diseases (macular degeneration, diabetic retinopathy, and glaucoma).

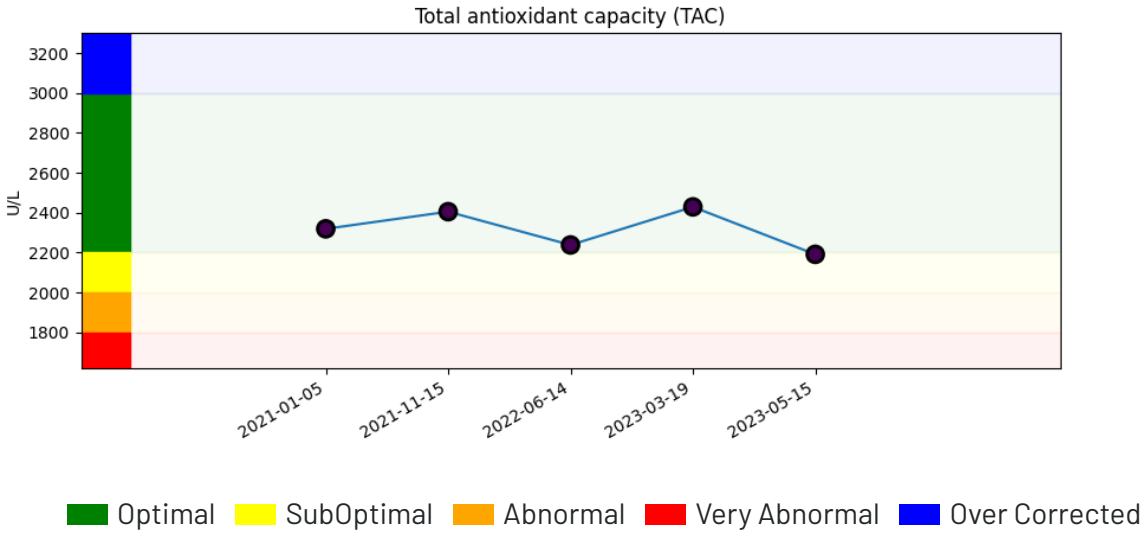
Intervention tips

- Activation of AMPK can increase SIRT1 expression and activity.
- Caloric restriction and fasting can increase SIRT1 via AMPK.
- Resveratrol and other polyphenols (turmeric, quercetin, butein, fisetin, berberine) can activate AMPK and increase SIRT1 expression and activity. Metformin can also activate AMPK. Melatonin can activate sirtuins.
- Resistance training can increase SIRT1 levels. Heat exposure and Saunas can increase AMPK, NAMPT and SIRT1 activity.
- Reduction of inflammation can increase SIRT1 levels.

Further reading and references

Regulation of SIRT1 and Its Roles in Inflammation. High Levels of SIRT1 Expression as a Protective Mechanism Against Disease-Related Conditions. How to Increase Sirtuins for Longevity.

Your Total antioxidant capacity (TAC) result: 2191.0 U/L



What are antioxidants?

Antioxidant is a substance that inhibits oxidation and is commonly used to counteract the deterioration of stored food products. Antioxidants removes potentially damaging oxidizing agents in a living organism and protect cells from the damage caused by oxidants or free radicals. The ability of antioxidants to combat free radicals strengthens the immune system to identify and fight toxins. Detoxification of the free radicals results in less cell damage and a healthier immune system, among other benefits.

Antioxidants comprise vitamins, minerals, enzymes, and natural products. Some antioxidants are naturally produced in the body and others are contained in foods we eat. Natural or synthetic antioxidants can also be added to foods that do not normally contain them for their health benefit or for preservation to prevent oxidation in foods.

A healthy diet is the most effective way to obtain the antioxidants for your body's needs. Many fruits and vegetables and well as grains, eggs and nuts are good sources of antioxidants. Many people do not get enough antioxidants from foods and may require supplementation for antioxidants to maintain health and combat diseases. Vitamin C and E are commonly used antioxidant vitamins. There are many other substances with antioxidant activities.

Despite the many health benefits of antioxidants, high concentrations of antioxidants from supplements may be harmful to the body. At high concentrations, antioxidants may act as pro-oxidants and increase oxidation, protect bad cells such as cancer cells in addition to good cells, reduce health benefits of exercise, and cause unwanted side effects such as

nausea and headaches, or even reach toxic levels. Maintaining a healthy balance between antioxidants and free radicals (pro-oxidants) is the key for health and longevity.

Jinfiniti tests the total antioxidant capacity (TAC), your body's overall capacity to fight free radicals. It is a photometric test that measures the biological antioxidant potential as the capacity of the serum/plasma sample to reduce iron from ferric (Fe3+) to ferrous form (Fe2+). The results are expressed in µmol/L of reduced iron.

What are the risk factors for low TAC?

Causes of antioxidant deficiency

- Insufficient intake of antioxidants.
- High production of free radicals.
- Unhealthy lifestyle.

Intervention tips

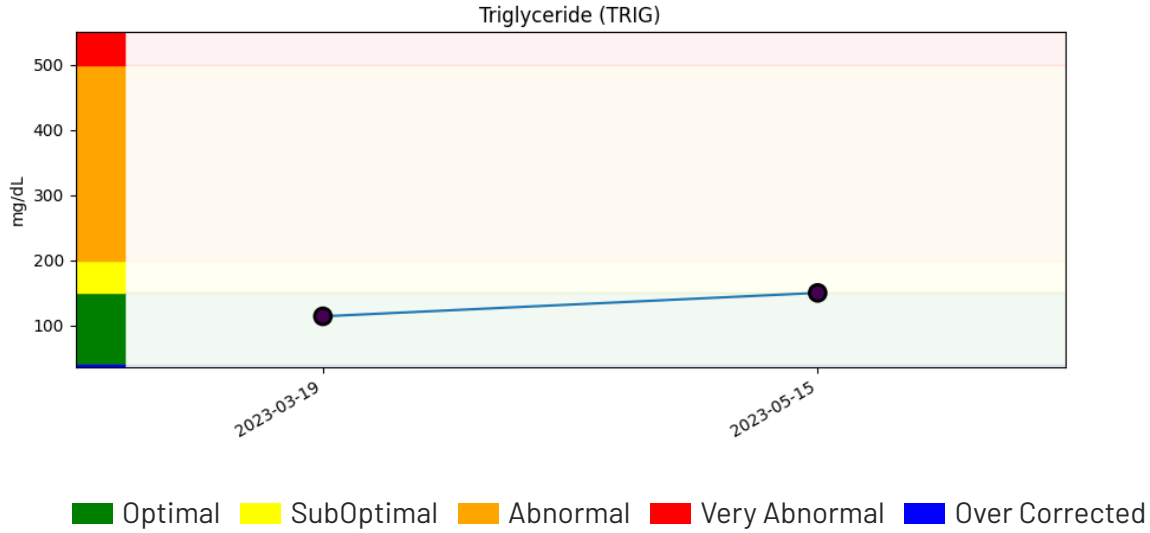
How to raise TAC

- Many foods and supplements contain powerful antioxidants.
- Pomegranate juice contains the highest antioxidant capacity.
- Other fruit juices.
- Red wine.
- Green tea.
- Berries, tomatoes and other foods.
- Vitamin C and vitamin E are commonly used antioxidant vitamins.
- Lycopene.
- Coenzyme Q10 (CoQ10).
- Alpha-lipoic acid.
- Ellagic acid.
- Glutathione.
- Selenium.
- Supplements that boost antioxidant enzymes: resveratrol, SIRT1 activators, AMPK activators.

Further reading and references

https://www.jinfiniti.com/blog/antioxidants_report/

Your Triglyceride (TRIG) result: 150.0 mg/dL



What is Triglyceride?

Triglyceride (TRIG) is a type of fat (lipid) found in the blood. Your body converts any excess calories you do not need right away into triglycerides, which are stored in fat cells. Triglycerides are released for energy between meals. Triglyceride level is elevated if food intake regularly exceeds demand. High-carbohydrate foods are particularly bad for triglycerides. Cholesterol and triglyceride are all lipids but have very different functions. Triglycerides store unused calories and provide energy when needed, while cholesterol is used to build cells and certain hormones.

High triglyceride level is a risk factor for arteriosclerosis, e.g., hardening of the arteries or thickening of the artery walls, which in turn increases the risk of heart attack, heart diseases, stroke, acute inflammation of the pancreas.

What are the causes of elevated triglyceride levels?

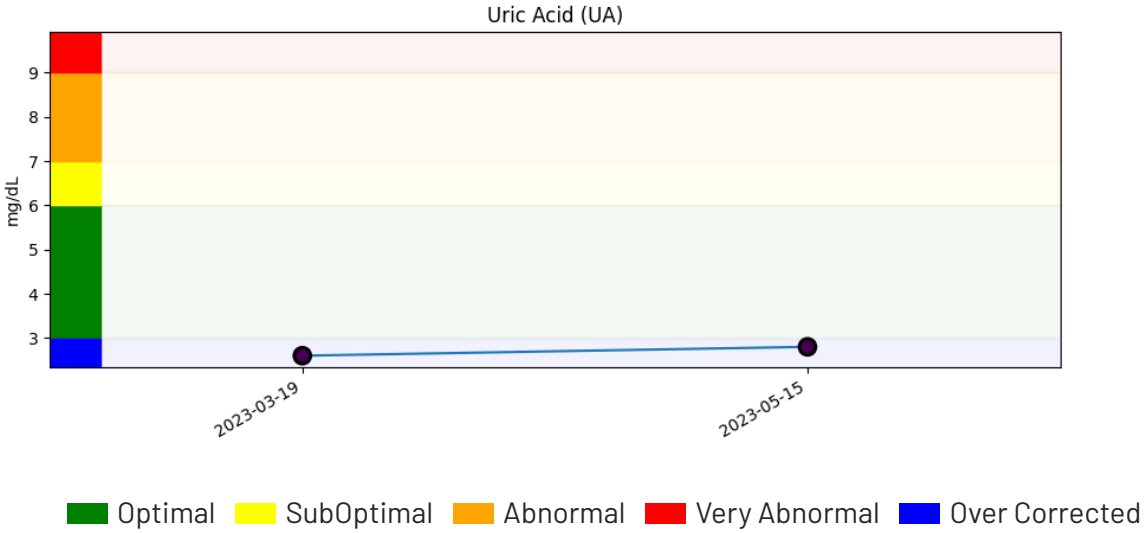
High triglycerides are often seen in individuals with metabolic syndrome, a cluster of conditions that include obesity, hypertension, diabetes, high triglyceride, and high cholesterol. It could also be a sign of low levels of thyroid hormones and can be caused by certain medications.

Intervention tips

- Reduce sugar and refined carbohydrates.
- Exercise regularly.
- Lose weight.
- Eat healthier fats.
- Limit alcohol consumption.
- Supplements and medications: NMN, niacin, fish oil, fibrates, statins. We have shown that the Accuri® Vitality Boost is quite effective in some people to lower triglyceride levels.

Further reading and references

Your Uric Acid (UA) result: 2.8 mg/dL



What is Uric acid?

Uric acid (UA) is a product of the metabolic breakdown of purine nucleotides and is a normal component of urine. The formation of uric acid from xanthine and hypoxanthine is catalyzed by the enzyme xanthine oxidase (XO) and xanthine is produced from other purines. Uric acid is released in hypoxic conditions. Water solubility of uric acid and its alkali metal and alkaline earth salts is very low.

Uric acid is a strong reducing agent (electron donor) and potent antioxidant. Over half of the total antioxidant capacity of the blood in humans comes from uric acid and associated hydrogen urate ion. This may explain why very low levels of uric acid reduces the median survival in men by 9.5 years.

High levels of uric acid can lead to gout and serious medical conditions like kidney stones, diabetes, stroke, heart disease, and more. Men with elevated uric acid levels have shortened lifespan by 11.7 years. Women usually have lower UA levels compared to men and median survival in women is reduced by six years in those with elevated UA levels.

What are the causes of elevated and low uric acid levels?

High uric acid:

- Intake of purine-rich foods, high fructose corn syrup, and sucrose.
- Reduced excretion by the kidneys and certain drugs that interfere with renal function.

- Low ATP reservoirs in muscle cells due to strenuous exercise, fasting, starvation and rapid weight loss, impaired ATP production such as metabolic myopathies.
- Untreated diseases such as diabetes, insulin resistance, hypothyroidism, hyperthyroidism, hypoparathyroidism, hypopotassemia, tumor lysis syndrome, Vitamin C deficiency, excessive alcohol consumption, excessively high AMP level.

Low uric acid:

- Low dietary zinc intake
- Certain diseases such as multiple sclerosis
- Certain drugs such as Sevelamer for prevention of hyperphosphataemia in patients with chronic kidney failure.

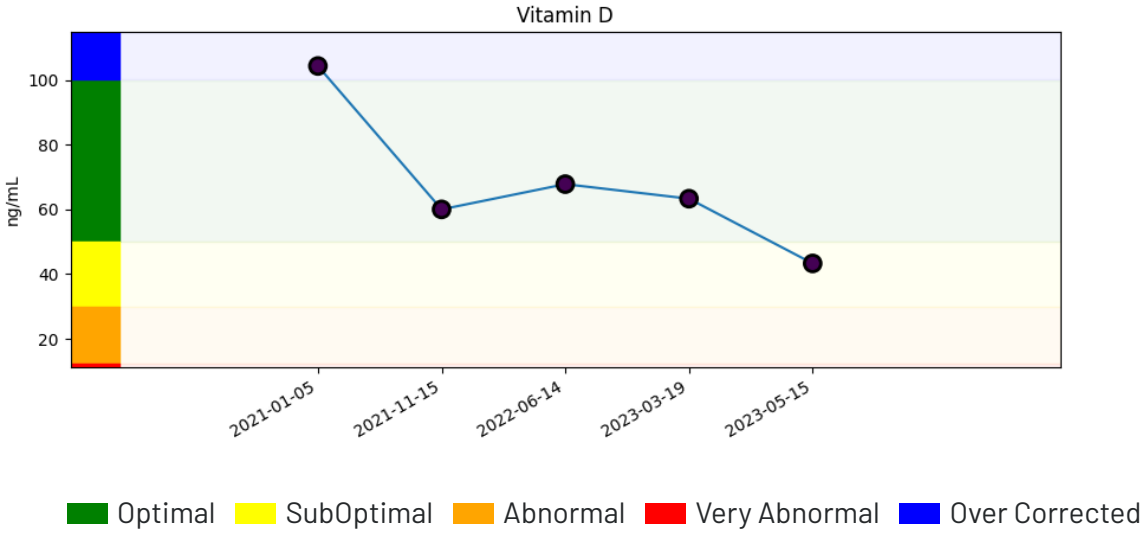
Intervention tips

- Avoid purine-rich foods to reduce UA: spinach, mushroom, red meat, prawns, tomato, moong dal, masoor dal, soybeans and coffee.
- Drink lots of water to flush out excess UA.
- Avoid diseases and conditions that may cause high or low UA levels.
- Seek help from a medical professional.

Further reading and references

High uric acid may decrease longevity by up to 11 years – Expert suggests 9 foods to avoid
Uric acid: Wikipedia

Your Vitamin D result: 43.3 ng/dL



What is vitamin D?

The main role of vitamin D is to maintain healthy bones by helping calcium and phosphate absorption from the intestines. Not having enough vitamin D raises risk of bone loss and fractures. Vitamin D is likely beneficial for other parts of the body as well. Studies have suggested an overall decrease in death, cancer, heart disease, blood pressure, respiratory illnesses, depression, chances of having a low-birthweight baby.

Vitamin D helps the immune system stay balanced. The way that vitamin D keeps the immune system healthy is very complex. Too much immune stimulation can result in autoimmune diseases. Insufficient immune system activity can result in frequent infections. A large prospective clinical trial showed in 2017 that vitamin D reduces the odds of developing a respiratory infection by approximately 42% in people with low baseline levels of 25-hydroxyvitamin D (< 25 ng/mL). Recent studies suggest that vitamin D plays a critical role in reducing COVID-19 infection and helping recovery from COVI-19 infection.

How to act on the result on Vitamin D has been the subject of great controversy in the medical field. Blood level of 25-hydroxy-vitamin D is usually measured in nanograms per milliliter. One opinion on the vitamin D deficiency is less than 12.5 ng/mL, which is found in about 6% of Americans. The Institute of Medicine (IOM) estimated that a vitamin D level of 20 ng/mL or higher was adequate for good bone health, and subsequently a level below 20 was considered a vitamin D deficiency. In 2011, the Endocrine Society issued a report urging a much higher minimum blood level of vitamin D. It concluded that “at a minimum, we recommend vitamin D levels of 30 ng/mL, and because of the vagaries of some of the assays, to guarantee sufficiency, we recommend between 40 and 60 ng/mL for both children and adults.”

Excessive supplementation of vitamin D may be harmful. Vitamin D is stored in fat and your fat cells can only store so much vitamin D. The result of high levels of vitamin D is high levels of calcium in blood and potentially hypercalcemia and calcification. Too high levels of vitamin D can be immunosuppressive as well.

What are the causes of vitamin D deficiency?

While anyone can be deficient in vitamin D, people who are older, have darker skin, or do not get enough sunlight are more likely to be deficient in vitamin D. People with certain diseases such as cancer often have vitamin D deficiency.

Intervention tips

The main source of vitamin D is production by your body when the skin is exposed to sun. It is estimated that 1000 -1500 hours of sun exposure in the year are needed by most people to produce the necessary amount of vitamin D. Due to vigilant sun protection and other factors, vitamin D deficiency is very common and on the rise. Vitamin D can also be obtained from other sources including some natural foods such as fatty fish, egg yolks, cheese and beef liver as well as foods fortified with vitamin D such as dairy products, soy milk, and cereals. However, many people, especially older adults, people with darker skin and limited sun exposure and overweight, cannot get enough vitamin D from sun exposure and foods and require vitamin D supplements. While a daily supplement of 1000 IU may be sufficient for most people, much higher dose is necessary for those who are deficient in vitamin D level.

Too much vitamin D (>100 ng/ml) can be harmful, increasing risk for fractures, falls and kidney stones, and can be toxic due to excessive level of calcium. There is some evidence that high levels of vitamin D may be associated with certain cancers and mortality. Testing for blood vitamin D level is the best way to find out how much supplementation is needed for each person. We recommend an optimal vitamin D level between 50-80 ng/mL to maximize health and longevity.

Further reading and references

https://www.jinfiniti.com/blog/vitamind_report/

Your W-Index™ summary

Your W-Index score: 86.0

The W-Index® is an indication of you overall health/wellness status. The maximum score for W-Index® is 100, which indicates you are optimal for all the AgingSOS® biomarkers. W-Index® score is reduced by each test with less than optimum value and the minimum score is set at zero. Calculation of W-Index® is based on our proprietary formula derived from our extensive database with healthy and unhealthy subjects.

Your W-Index™ breakdown

#	Lab	Result	Optimal range	Am I optimized?	Penalty
1	8-hydroxy-2'-deoxyguanosine	6.2 pg/ml	< 10.0 pg/ml	✓	0
2	Alanine aminotransferase (ALT)	43.0 U/L	9.0 - 33.0 U/L	✗	-1.66
3	Albumin	4.6 g/dL	4.1 - 5.5 g/dL	✓	0
4	Alkaline phosphatase (ALP)	44.0 U/L	20.0 - 70.0 U/L	✓	0
5	Circulating NAD	610.0 nM	450.0 - 1500.0 nM	✓	0
6	Creatine Kinase (CK)	317.0 U/L	50.0 - 500.0 U/L	✓	0
7	estimated glomerular filtration rate	110.0 mL/min/ 1.73m2	90.0 - 1000.0 mL/min/ 1.73m2	✓	0
8	Glycated serum proteins (GSP)	184.0 µM	100.0 - 260.0 µM	✓	0
9	high sensitivity C-reactive protein (hs-CRP)	0.2 mg/L	< 1.0 mg/L	✓	0
10	High-density lipoproteins (HDL-C)	52.0 mg/dL	50.0 - 80.0 mg/dL	✓	0
11	Intracellular NAD	67.6 µM	40.0 - 100.0 µM	✓	0
		6.6 ng/ml	5.0 - 30.0 ng/ml		0

#	Lab	Result	Optimal range	Am I optimized?	Penalty
12	Klotho			✓	
13	Low-density lipoproteins (LDL-C)	133.0 mg/dL	70.0 - 130.0 mg/dL	✗	-0.19
14	Reactive oxygen metabolites (ROM)	594.0 CARR U	150.0 - 380.0 CARR U	✗	-6.46
15	Senescence-associated-β-galactosidase (SA-β-gal)	2435.0 JPM U	< 750.0 JPM U	✗	-4.8
16	Sirtuins	6.0 JPM U	6.0 - 12.0 JPM U	✓	0
17	Total antioxidant capacity (TAC)	2191.0 U/L	2200.0 - 3000.0 U/L	✗	-0.04
18	Triglyceride (TRIG)	150.0 mg/dL	40.0 - 150.0 mg/dL	✓	0
19	Uric Acid (UA)	2.8 mg/dL	3.0 - 6.0 mg/dL	✗	-0.2
20	Vitamin D	43.3 ng/dL	50.0 - 100.0 ng/dL	✗	-0.66

**For every deficiency we detect, points are deducted from your W-Index™ score.*

Disclaimer

The AgingSOS® is not a diagnostic test and is not approved by the FDA. The AgingSOS® does not evaluate many other factors that may be important for your health status and disease diagnosis and should NOT be used as replacement for your medical care by your physicians.

Questions?

If you have any questions or concerns, don't hesitate to contact us at:

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We want to thank you for letting us be a part of your journey for optimized health.