Optimal DX

Functional Health Report

A comprehensive analysis of your test results.

BLOOD CHEMISTRY ANALYSIS

Patient Report

Prepared for	Female Sample 59 year old female born Nov 1, 1966 56 years old at the time this lab test was taken Fasting

Requested by	Mrs. Lauren Hayden, MS Holistic Nutrition, BCHN Live Well LLC

Collected Date	Jan 26, 2023
Lab	Quest

What's Inside?

1

An introduction to Functional Blood Chemistry Analysis and your Functional Health Report (FHR).

Introduction

2

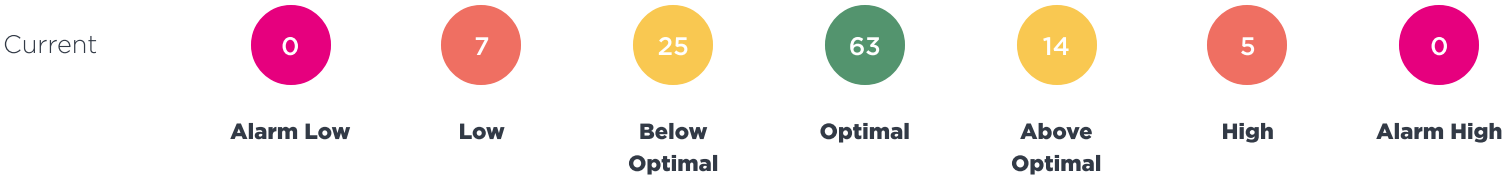
A full breakdown of all the individual biomarker results, showing if a particular biomarker is outside the optimal range or the standard range, plus a comparative and historical view.

Analytics

Blood Test Results Comparative

The Blood Test Results Comparative Report lists the results of this blood test and compares it to a previous blood test thus allowing you to visualize change in your biomarker results. The thumbs-up and down icons help to show change, whether it is moving in the right direction or further away from optimal. Even though a result may be out of the optimal or standard range, a thumbs up indicates that the most recent result is moving toward optimal.

A comparison of the total number of biomarkers by optimal range



Biomarker	Quest Current Jan 26, 2023	Optimal Range	Standard Range	Units
BLOOD GLUCOSE				
Glucose Fasting	87.50 ↑	75.00 - 86.00	65.00 - 99.00	mg/dL
Hemoglobin A1C	4.60	4.60 - 5.30	0 - 5.70	%
eAG	85.00	85.00 - 105.00	82.00 - 154.00	mg/dL
Insulin	3.70	2.00 - 5.00	0 - 18.40	µIU/mL
C-Peptide	1.11	1.10 - 2.10	0.80 - 3.85	ng/mL
Fructosamine	201.00	190.00 - 228.00	190.00 - 270.00	µmol/L
HOMA2-%B	87.50 ↓	90.00 - 110.00	70.00 - 120.00	%
HOMA2-%S	124.00	85.00 - 200.00	75.00 - 250.00	%
HOMA2-IR	0.80	0.75 - 1.25	0.50 - 1.75	Index
QUICKI	0.40		0.35 - 0.45	Index
KIDNEY				
BUN	6.00 ↓ ↓	10.00 - 16.00	7.00 - 25.00	mg/dL
Creatinine	0.65 ↓	0.80 - 1.10	0.40 - 1.50	mg/dL
BUN/Creatinine	9.00 ↓	10.00 - 16.00	6.00 - 22.00	Ratio
eGFR	104.00	75.00 - 160.00	60.00 - 160.00	mL/min
ELECTROLYTES				
Sodium	141.90	137.00 - 142.00	135.00 - 146.00	mEq/L
Potassium	3.90 ↓	4.00 - 5.00	3.50 - 5.30	mEq/L
Chloride	106.00	100.00 - 108.00	98.00 - 110.00	mEq/L

Biomarker	Quest Current Jan 26, 2023	Optimal Range	Standard Range	Units
CO2, bicarbonate	26.00	25.00 - 30.00	19.00 - 30.00	mEq/L
Sodium : Potassium	36.38 ↑ ↑		30.00 - 35.00	ratio
METABOLIC				
Anion Gap	13.80	11.00 - 16.00	10.00 - 20.00	mEq/L
Uric Acid	5.65 ↑	3.00 - 4.70	2.50 - 7.00	mg/dL
Creatine Kinase (CK)	72.00	65.00 - 135.00	29.00 - 143.00	U/L
Leptin	12.20 ↑	4.70 - 11.00	4.70 - 23.70	ng/mL
ENZYMES				
Amylase	42.00	40.00 - 86.00	21.00 - 103.00	U/L
Lipase	25.00	22.00 - 51.00	13.00 - 60.00	U/L
PROTEINS				
Protein - Total	6.10 ↓	6.90 - 8.10	6.10 - 8.10	g/dL
Albumin	4.40 ↓	4.50 - 5.00	3.60 - 5.10	g/dL
Globulin - Total	1.70 ↓ ↓	2.40 - 2.80	1.90 - 3.70	g/dL
Albumin/Globulin Ratio	2.60 ↑ ↑	1.40 - 2.10	1.00 - 2.50	ratio
MINERALS				
Calcium	9.10	8.90 - 9.50	8.60 - 10.40	mg/dL
Phosphorus	2.90	2.60 - 3.50	2.50 - 4.50	mg/dL
Magnesium - Serum	2.30	2.20 - 2.50	1.50 - 2.50	mg/dL
Magnesium - RBC	6.20	6.00 - 6.80	4.00 - 6.80	mg/dL
Copper - Serum	76.00 ↓	90.00 - 150.00	70.00 - 175.00	µg/dL
Zinc - Serum	65.70 ↓	99.00 - 130.00	50.00 - 130.00	µg/dL
Zinc - RBC	9.20 ↓	10.40 - 14.70	9.00 - 14.70	mg/L
Copper : Zinc Ratio	1.16	0.70 - 1.50	0.80 - 2.00	Ratio
Calcium : Albumin	2.07	0 - 2.18	0 - 2.60	ratio
Calcium : Phosphorus	3.14	2.30 - 3.20	1.90 - 4.20	ratio
LIVER AND GB				
Alkaline Phosphatase	46.00	45.00 - 100.00	31.00 - 125.00	IU/L
AST	14.00	10.00 - 26.00	10.00 - 35.00	IU/L
ALT	11.00	10.00 - 26.00	6.00 - 29.00	IU/L
LDH	131.00 ↓	140.00 - 200.00	100.00 - 200.00	IU/L
Bilirubin - Total	0.60	0.50 - 0.90	0.20 - 1.20	mg/dL
Bilirubin - Direct	0.10	0.10 - 0.15	0 - 0.20	mg/dL
Bilirubin - Indirect	0.50	0.40 - 0.75	0.20 - 1.20	mg/dL
GGT	8.00 ↓	10.00 - 17.00	3.00 - 50.00	IU/L
AST : ALT	1.27 ↑	0 - 1.00	0 - 1.50	Ratio
IRON MARKERS				
Iron - Serum	79.00 ↓	85.00 - 130.00	40.00 - 190.00	µg/dL
Ferritin	12.00 ↓ ↓	45.00 - 79.00	16.00 - 232.00	ng/mL

Biomarker	Quest Current Jan 26, 2023	Optimal Range	Standard Range	Units
TIBC	284.00	250.00 - 350.00	250.00 - 425.00	µg/dL
UIBC	205.00	130.00 - 300.00	110.00 - 350.00	µg/dL
Transferrin saturation	28.00	24.00 - 35.00	20.00 - 48.00	%
Transferrin	255.00	200.00 - 360.00	200.00 - 390.00	mg/dL
LIPIDS				
Cholesterol - Total	165.00	160.00 - 199.00	125.00 - 199.00	mg/dL
Triglycerides	65.00	50.00 - 80.00	0 - 149.99	mg/dL
LDL Cholesterol	70.00 ↓	80.00 - 99.99	0 - 99.99	mg/dL
HDL Cholesterol	81.00	55.00 - 93.00	50.00 - 100.00	mg/dL
Non-HDL Cholesterol	84.00	70.00 - 99.00	0 - 129.99	mg/dL
VLDL Cholesterol	14.20	0 - 15.00	0 - 30.00	mg/dL
Total Cholesterol/HDL-C Ratio	2.04	0 - 3.00	0 - 5.00	Ratio
Triglyceride:HDL	0.80	0.50 - 1.90	0 - 2.00	ratio
LDL : HDL	0.86	0 - 2.34	0 - 4.12	Ratio
CARDIOMETABOLIC				
Homocysteine	7.50 ↑	5.00 - 7.20	0 - 10.30	µmol/L
THYROID				
TSH	2.95 ↑	1.00 - 2.00	0.40 - 4.50	mIU/L
T4 - Total	5.20 ↓	6.00 - 11.90	4.50 - 12.00	µg/dL
T4 - Free	0.98 ↓	1.00 - 1.50	0.80 - 1.80	ng/dL
T3 - Total	89.20 ↓	90.00 - 168.00	76.00 - 181.00	ng/dL
T3 - Free	2.80 ↓	3.00 - 3.50	2.30 - 4.20	pg/mL
Reverse T3	28.00 ↑ ↑	10.00 - 25.00	8.00 - 25.00	ng/dL
T3 Uptake	26.20 ↓	27.00 - 35.00	22.00 - 35.00	%
Free Thyroxine Index (T7)	1.36 ↓ ↓	1.70 - 4.60	1.40 - 3.80	Index
Thyroid Peroxidase (TPO) Abs	1.10	0 - 6.80	0 - 9.00	IU/mL
Thyroglobulin Abs	<1.00		0 - 1.00	IU/mL
Free T3 : Reverse T3	10.00	10.00 - 28.00	2.00 - 28.00	Ratio
Free T3 : Free T4	2.86 ↑	2.40 - 2.70	2.20 - 2.90	Ratio
INFLAMMATION				
Hs CRP	1.15 ↑ ↑		0 - 1.00	mg/L
C-Reactive Protein	4.65 ↑	0 - 3.00	0 - 7.90	mg/L
ESR	11.20 ↑	0 - 10.00	0 - 30.00	mm/hr
Fibrinogen Activity	221.00	175.00 - 300.00	175.00 - 425.00	mg/dL
Neutrophil : Lymphocyte (NLR)	1.25	1.00 - 1.70	1.00 - 3.00	Ratio
VITAMINS				
Vitamin D (25-OH) - Total	56.20	50.00 - 90.00	30.00 - 100.00	ng/mL
Vitamin B12	462.00 ↓	545.00 - 1100.00	200.00 - 1100.00	pg/mL
Folate - Serum	15.20	15.00 - 27.00	5.50 - 27.00	ng/mL
Methylmalonic Acid	261.00 ↑	0 - 260.00	0 - 318.00	nmol/L

Biomarker	Quest Current Jan 26, 2023	Optimal Range	Standard Range	Units
Folate - RBC	376.00 ↓	500.00 - 1504.00	280.00 - 1504.00	ng/mL
HORMONES				
DHEA-S	285.00	237.00 - 349.00	14.00 - 349.00	µg/dL
FSH	16.30 *UNKNOWN*	Follicular Luteal Ovulation Post Menopausal	2.50 - 10.20 1.50 - 9.10 3.10 - 17.70 23.00 - 116.30	mIU/mL
LH	9.80 *UNKNOWN*	Follicular Luteal Ovulation Post Menopausal	1.90 - 12.50 0.50 - 16.90 8.70 - 76.30 10.00 - 54.70	mIU/mL
Testosterone Total	33.20 ↓	35.00 - 45.00	2.00 - 45.00	ng/dL
Testosterone Free	3.38	3.25 - 4.60	0.20 - 5.00	pg/mL
Sex Hormone Binding Globulin	75.00	50.00 - 80.00	17.00 - 124.00	nmol/L
Estradiol	55.00 *UNKNOWN*	Follicular Luteal Ovulation Post Menopausal	19.00 - 144.00 56.00 - 214.00 64.00 - 357.00 0.00 - 31.00	pg/mL
Progesterone	8.00 *UNKNOWN*	Follicular Luteal Ovulation Post Menopausal	0.00 - 1.00 2.60 - 21.50 0.10 - 12.00 0.00 - 0.50	ng/mL
Cortisol - Total/AM	9.00 ↓	10.00 - 15.00	4.00 - 22.00	µg/dL
Cortisol : DHEA-S	0.03		0 - 0.09	ratio
Gastrin	46.00	45.00 - 90.00	0 - 100.00	pg/mL
Testosterone Bioavailable	8.10	5.50 - 8.50	0.50 - 8.50	ng/dL
RBCS				
RBC	4.23 ↓	4.30 - 4.80	3.80 - 5.10	m/cumm
Hemoglobin	13.80	13.50 - 14.50	11.70 - 15.50	g/dL
Hematocrit	40.00	37.00 - 44.00	35.00 - 45.00	%
MCV	94.60 ↑	82.00 - 89.90	80.00 - 100.00	fL
MCH	32.60 ↑	28.00 - 31.90	27.00 - 33.00	pg
MCHC	34.50	34.00 - 36.00	32.00 - 36.00	g/dL
Platelets	187.00 ↓	190.00 - 300.00	140.00 - 400.00	10E3/uL
MPV	8.80 ↑	7.50 - 8.20	7.50 - 11.50	fL
RDW	12.40	11.00 - 12.60	11.00 - 15.00	%
WBCS				
Total WBCs	2.60 ↓ ↓	3.80 - 6.00	3.80 - 10.80	k/cumm
Neutrophils - %	50.40	50.00 - 60.00	38.00 - 74.00	%
Lymphocytes - %	40.20 ↑	30.00 - 35.00	14.00 - 46.00	%
Monocytes - %	6.80	4.00 - 7.00	4.00 - 13.00	%
Eosinophils - %	1.50		0 - 3.00	%
Basophils - %	1.10 ↑ ↑		0 - 1.00	%
Neutrophils - Absolute	1.31 ↓ ↓	1.90 - 4.20	1.50 - 7.80	k/cumm
Lymphocytes - Absolute	1.05 ↓	1.44 - 2.54	0.85 - 3.90	k/cumm

Biomarker	Quest			
	Current Jan 26, 2023	Optimal Range	Standard Range	Units
Monocytes - Absolute	0.18 ↓ ↓	0.20 - 0.40	0.20 - 0.95	k/cumm
Eosinophils - Absolute	0.04	0.03 - 0.20	0 - 0.50	k/cumm
Basophils - Absolute	0.03	0 - 0.11	0 - 0.20	k/cumm

3

A comprehensive assessment of Functional Body Systems plus a detailed evaluation of your Nutrient Status, ensuring a holistic understanding of your health and well-being.

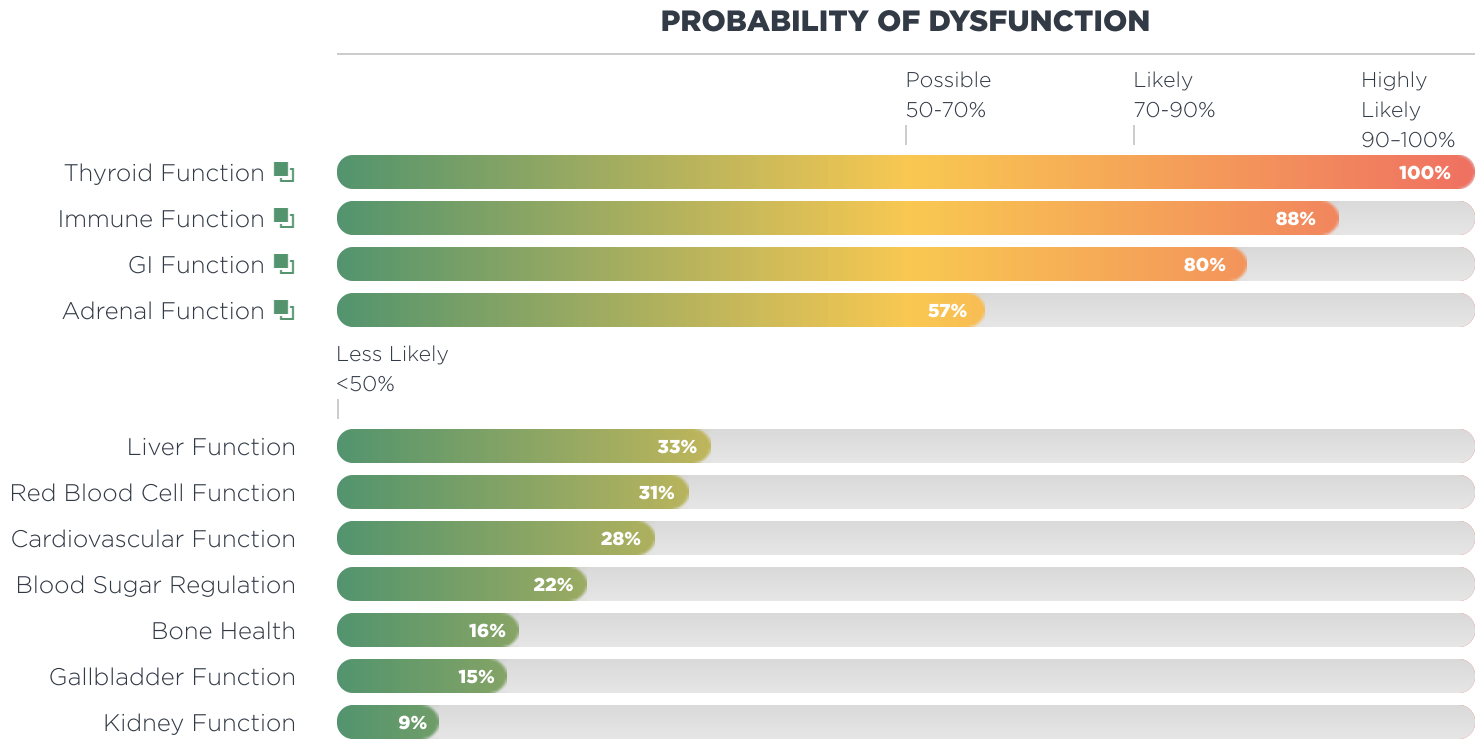
Assessment

Functional Body Systems

The Functional Body System results represent an algorithmic analysis of this blood test. These results have been converted into your individual Functional Body Systems Report based on our latest research.

This report gives you an indication of the level of dysfunction that exists in the various physiological systems in your body.

Each Body System that has a probability of dysfunction above 50% is included in the section that follows so you can read a detailed description and individual explanation of the results shown in this report.



Functional Body Systems Details

This section contains detailed descriptions and explanations of the results presented in the Functional Body Systems Report including all the biomarkers considered in the algorithmic analysis and the rationale behind the interpretation.

Dysfunction Highly Likely. Much improvement required.

THYROID FUNCTION

The Thyroid Function score looks at biomarkers on this blood test that reflect the degree of risk in the function of your thyroid. A high Thyroid Function score indicates that you may be at an increased risk of Thyroid dysfunction. The thyroid produces hormones that control how the body uses energy. They are responsible for controlling metabolism in the body, maintaining body temperature, regulating cholesterol, and controlling mood. By examining specific biomarkers on the blood test we can see if your thyroid is in a state of increased activity, in a state of decreased function, or hopefully optimal function! In summary, your score is high, which indicates that your Thyroid might not function as optimally as it should and may need support moving forward.

Rationale

TSH ↑, T4 - Total ↓, T4 - Free ↓, T3 - Total ↓, T3 - Free ↓, Reverse T3 ↑, T3 Uptake ↓, Free Thyroxine Index (T7) ↓

Biomarkers considered

TSH, T4 - Total, T4 - Free, T3 - Total, T3 - Free, Reverse T3, T3 Uptake, Free Thyroxine Index (T7), Free T3 : Reverse T3

Dysfunction Likely Improvement required.

IMMUNE FUNCTION

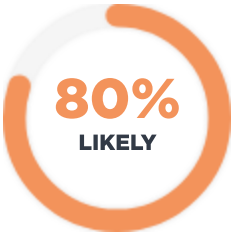
The Immune Function score reflects the degree of function in your immune system. When the immune system is in a state of balance, we can cope and deal with infections with little or no lasting negative side effects. The Immune Function score looks for clues in your blood test that can help determine if there's immune dysregulation and, if so, what it is. Your score is moderate, which indicates that your immune is not functioning as well as it should and may need support moving forward.

Rationale

Total WBCs ↓, Globulin - Total ↓, Lymphocytes - % ↑, Monocytes - Absolute ↓, Lymphocytes - Absolute ↓, Neutrophils - Absolute ↓

Biomarkers considered

Total WBCs, Globulin - Total, Neutrophils - %, Lymphocytes - %, Monocytes - %, Monocytes - Absolute, Lymphocytes - Absolute, Neutrophils - Absolute, Albumin, Alkaline Phosphatase, Ferritin



Dysfunction Likely
Improvement required.

GI FUNCTION

The GI Function score reflects the degree of function in your gastrointestinal (GI) system. The gastrointestinal system is responsible for the digestion and breakdown of macronutrients (proteins, fats, and carbohydrates) into small particles so they can be easily absorbed and utilized. The GI system is also responsible for the excretion and elimination of waste from the body. The GI Function score looks for clues in your blood test that can help determine if there's dysregulation and, if so, what it is. Your score is moderate, which indicates that your GI is not functioning as well as it should and may need support moving forward.

Rationale

BUN ↓, Protein - Total ↓, Globulin - Total ↓, Albumin ↓, MCV ↑, Basophils - % ↑, Iron - Serum ↓, Creatinine ↓, Total WBCs ↓

Biomarkers considered

BUN, Protein - Total, Globulin - Total, Albumin, Phosphorus, Alkaline Phosphatase, MCV, Eosinophils - %, Basophils - %, Iron - Serum, Creatinine, Chloride, Calcium, Total WBCs, Gastrin

Dysfunction Possible
There may be improvement needed in certain areas.

ADRENAL FUNCTION

It is possible that you may be at risk of an emerging adrenal dysfunction. While this may not require immediate attention, we will want to watch this on future blood tests.

Rationale

Potassium ↓, Sodium : Potassium ↑, Cortisol - Total/AM ↓

Biomarkers considered

Sodium, Potassium, Sodium : Potassium, DHEA-S, Cortisol - Total/AM, Chloride

Biomarkers not available in this test - consider having run in future tests:

Aldosterone, Cortisol - PM

4

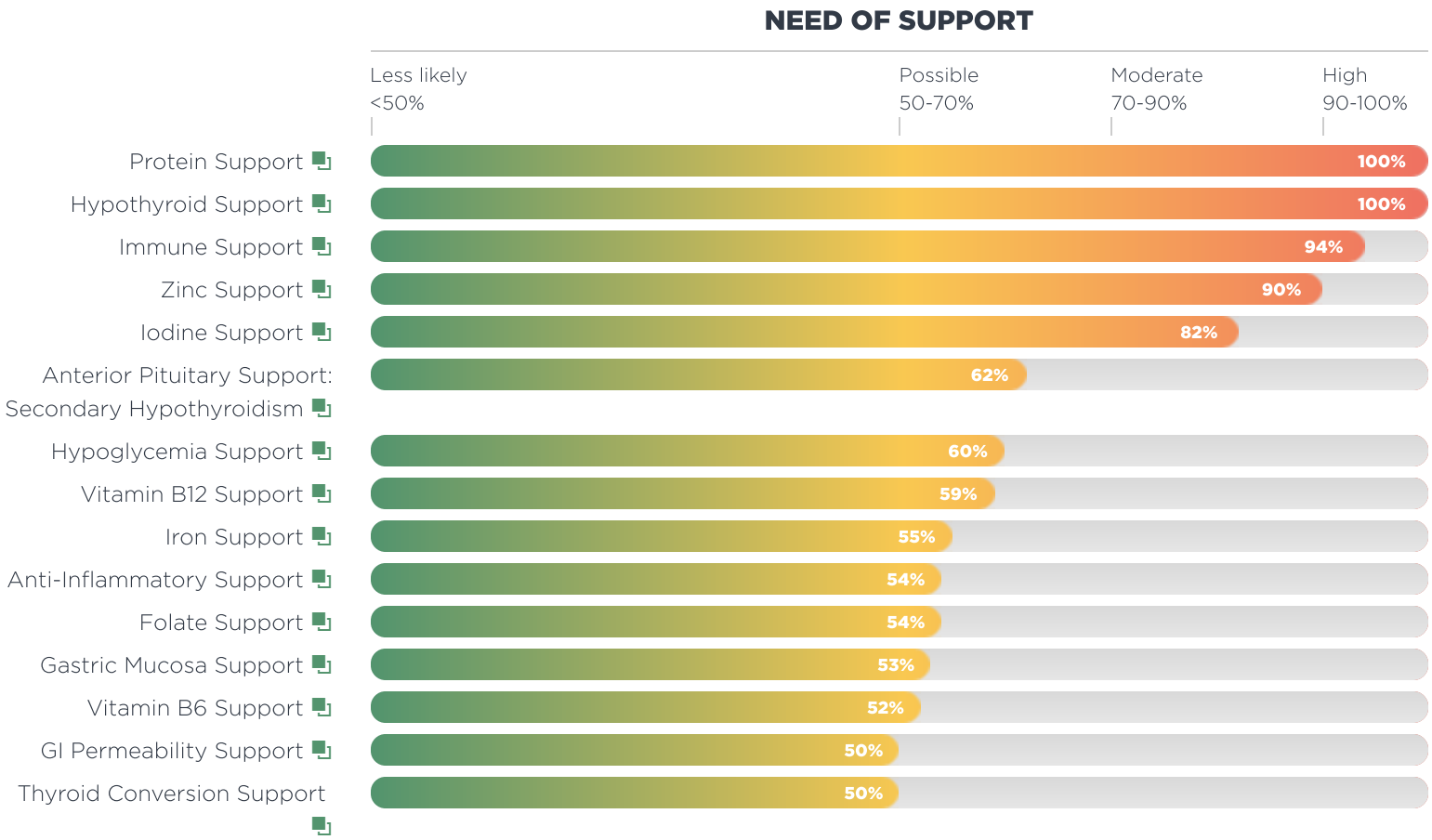
The Health Concerns report takes all the information on this report and focuses on the top areas that need the most support.

Health Concerns

Health Concerns Report

The Health Concerns Report takes all the information in this report and focuses on the top areas that need the most support.

Each health concern is included in the following section so you can read an explanation of the results shown in this report.



Health Concerns Details

This section contains an explanation of the results presented in the Health Concerns Report including all the biomarkers considered in the analysis and the rationale behind the interpretation.

PROTEIN SUPPORT

The results of your blood test indicate that your protein levels might be lower than optimal and shows a need for protein supplementation.

Rationale

Protein - Total ↓, Albumin ↓, BUN ↓, Creatinine ↓, BUN/Creatinine ↓, C-Reactive Protein ↑

HYPOTHYROID SUPPORT

The results of your blood test indicate a tendency towards hypothyroidism and a need for thyroid gland support.

Rationale

TSH ↑, T4 - Total ↓, T3 - Total ↓, T3 Uptake ↓, T4 - Free ↓, T3 - Free ↓, Free Thyroxine Index (T7) ↓

IMMUNE SUPPORT

The results of your blood test indicate a tendency towards immune insufficiency and a need for immune support.

Rationale

Total WBCs ↓, Albumin ↓, Globulin - Total ↓

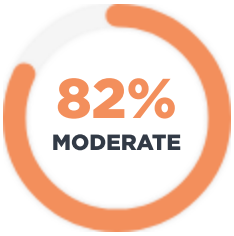
ZINC SUPPORT

The results of your blood test indicate that your zinc levels might be lower than optimal and shows a need for zinc supplementation.

Rationale

Zinc - Serum ↓, Zinc - RBC ↓

IODINE SUPPORT



The results of your blood test indicate that your iodine levels might be lower than optimal and shows a need for iodine supplementation.

Rationale

T4 - Total ↓, T4 - Free ↓, T3 Uptake ↓, TSH ↑

ANTERIOR PITUITARY SUPPORT: SECONDARY HYPOTHYROIDISM

The results of your blood test indicate a need for thyroid support.

Rationale

T4 - Total ↓, T4 - Free ↓, T3 - Free ↓, Free Thyroxine Index (T7) ↓, T3 - Total ↓

HYPOGLYCEMIA SUPPORT

The results of your blood test indicate a tendency towards hypoglycemia or low blood sugar and a need for blood sugar support.

Rationale

LDH ↓

VITAMIN B12 SUPPORT

The blood test results indicate that your vitamin B12 levels might be lower than optimal and that vitamin B12 supplementation may be needed.

Rationale

Vitamin B12 ↓, Methylmalonic Acid ↑, Homocysteine ↑, MCV ↑

IRON SUPPORT

The results of your blood test indicate that your iron levels might be lower than optimal and shows a need for iron supplementation.

Rationale

Iron - Serum ↓, Ferritin ↓, RBC ↓

ANTI-INFLAMMATORY SUPPORT

The results of your blood test indicate a tendency towards inflammation and show a need for anti-inflammatory support.

Rationale

Hs CRP ↑, Homocysteine ↑, Uric Acid ↑, ESR ↑, Lymphocytes - % ↑, Basophils - % ↑, C-Reactive Protein ↑

FOLATE SUPPORT

The blood test results indicate that your folate levels might be lower than optimal and that folate supplementation may be needed.

Rationale

Folate - RBC ↓, Homocysteine ↑, MCV ↑

GASTRIC MUCOSA SUPPORT

The results of your blood test indicate a tendency towards gastric inflammation and a need for support for the stomach lining.

Rationale

Protein - Total ↓, Creatinine ↓, Albumin ↓, ESR ↑, Basophils - % ↑

VITAMIN B6 SUPPORT

The results of your blood test indicate that your vitamin B6 levels might be lower than optimal and show a need for vitamin B6 supplementation.

Rationale

Homocysteine ↑, GGT ↓

GI PERMEABILITY SUPPORT

The results of your blood test indicate a tendency towards intestinal hyperpermeability, a condition commonly called Leaky Gut Syndrome, and a need for support for the mucosal lining of the gastrointestinal tract.

Rationale

Uric Acid ↑

THYROID CONVERSION SUPPORT

The results of your blood test indicate a tendency towards a difficulty converting thyroxine (T4) into triiodothyronine (T3), which can cause symptoms of hypothyroidism, and a need for thyroid gland support.

Rationale

T3 - Total ↓, T3 - Free ↓, Reverse T3 ↑

5

Disclaimer

Disclaimer

This Report contains information for the exclusive use of the named recipient only and includes confidential and privileged information. If you are not the named recipient or have not been given permission by that person, you are prohibited from reading or using this Report in any way. Any distribution, dissemination, or copying of this Report is strictly prohibited.

All information provided in this Report is provided for educational purposes only, including without limitation the 'optimal ranges' set forth in this Report. Neither this Report, nor any of the information contained in this Report, is intended for, or should be used for the purpose of, medical diagnosis, prevention, or treatment, including self-diagnosis, prevention, or treatment. This Report should not be used as a substitute for professional medical care, and should not be relied upon in diagnosing or treating a medical condition, ailment, or disease.

The 'optimal ranges' set forth in this Report are general reference recommendations only, and are not intended to be guidelines for any specific individual. The 'optimal ranges' set forth in this Report are for educational purposes only. They are not intended to be, nor should they be construed as, a claim or representation of medical diagnosis or treatment.

Neither this Report, nor any information contained in this Report, should be considered complete, or exhaustive. This report does not contain information on all diseases, ailments, physical conditions or their treatment. This report is based on the lab data provided, which may or may not include all relevant and appropriate measures of your biochemistry.

The absence of a warning for a given drug or supplement or any combination thereof in no way should be construed to indicate that the drug or supplement or any combination thereof is safe, effective, or appropriate for you. Statements made about a supplement, product, or treatment have not been evaluated by the Food and Drug Administration (FDA) U.S. or MHRA U.K. Any mentioned supplement, product, or treatment is not intended to diagnose, treat, cure or prevent any disease. The FDA or MHRA U.K. has not evaluated the information contained in this Report.

You are encouraged to confirm any information obtained from this Report with other sources, and review all information regarding any medical condition or the treatment of such condition with your physician.

NEVER DISREGARD PROFESSIONAL MEDICAL ADVICE, DELAY SEEKING MEDICAL ADVICE OR TREATMENT, OR STOP CURRENT MEDICAL TREATMENT, BECAUSE OF SOMETHING YOU HAVE READ IN THIS REPORT.

Consult your physician or a qualified healthcare practitioner regarding the applicability of any of the information or materials provided in this Report in regards to your symptoms or medical condition. Always consult your physician before beginning a new treatment, diet, exercise, fitness plan, or health plan or program, and before taking any drug, supplement, or any combination thereof; or if you have questions or concerns about your health, a medical condition, or any plan or course of treatment. If you think you have a medical emergency, call for emergency medical assistance or your doctor immediately.