Bloodscanner

Overview

The assessment of a person`s metabolic health gives a general overview about the current status and insights in organ- (liver, kidney, pancreas, muscle) and system health (inflammation, neurological health, energy- and amino acid metabolism).

Regulatory Status

RESEARCH USE ONLY (RUO): The RUO-Test contains no medical diagnosis and does not replace the medical diagnosis of a physician.

Method

lifespin Bloodscanner V 1.0.0 based on nuclear magnetic resonance (NMR) data.

Test Parameter

Proteins
Albumin
Glycoprotein A
Glycoprotein B
Total Protein

Sugars
Glucose
Mannitol
Mannose
Myo-Inositol

Keton bodies
Acetone
3-Hydroxybutyric acid
Acetoacetic acid

Amides & Amines and Derivatives
Creatinine
Pantothenic acid
Uracil
Urea
Choline
Creatine
Dimethylamine
Dopamine
Ethanolamine
Methylamine
Serotonin
Spermidine
Trimethylamine
Tryptamine

Amino Acid Metabolism
1-Methylhistidine
2-Aminoadepic acid
3-Methylhistidine
4-Aminobenzooic acid
Hydroxyproline
alpha-Aminobutyric acid
beta-Aminobutyric acid
Alanine
beta-Alanine
Carnitine
Cystine
Dimethylglycine
Glutamic acid
Glutamine
Glycine
Histidine
Isoleucine
Leucine
Lysine
Levodopa
Methionine
Ornithine
Phenlyalanine
Phosphoserine
Proline
Sarcosine
Serine
Taurine
Threonine
Tyrosine
Valine

Other Lipids
Phosphatidylcholine
Sphingomyelin

Alcohols
1,2 Propanediol
2-Methyl-1,3-propanediol
2,3-Butanediol
Ethanol
Glycerol
Isopropanol
Methanol
n-Propanol
tert. Butanol

Sulfones
Dimethylsulfone

Organic Acids
2-Hydroxyisobutyric acid
Acetic acid
Ascorbic acid
Citric acid
Dimethylmalonic acid
Formic acid
Fumaric acid
Glucuronic acid
Hydroxyglutaric
Itaconate
Lactic acid
Maleic acid
Methylmalonic acid
Propionic acid
Pyruvic acid
Succinic acid

Organic Bases
Adenine
Hypoxhantine
Inosine

Free Drugs
free-Ceftazidim
free-Fluconazol
free-Flucytosine
free-Fosfomycin
free-Levitiracetam
free-Piperacillin

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Specimen Type

Matrix:
Human blood serum

Specimen Requirements

Patient Preparation:
Before blood sampling patients should be fasting for 8 hours.

Collection Container / Tube:
Sarstedt S-Monovette (red top). Serum gel barrier tubes are not acceptable.

Specimen Volume: 1 mL.

Specimen Minimum Volume: 0.5 mL.

Collection instruction:

- Allow isopropyl alcohol (from phlebotomy site prep) to dry thoroughly before venipuncture.
- Centrifuge and aliquot serum into an appropriate plastic vial.

Storage Instruction:
Send-in-Services:
Keep frozen and temperature-guided shipment on dry ice.

Reject Due To

- Specimen other than serum
- Improper labeling
- Serum collected using gel barrier tube
- Specimen received in inappropriate container
- Gross hemolysis
- Gross lipemia
- Gross icterus
- Precipitation

Method Description

The analysis software “lifespin Profiler V3.0.0.cloud” is used for the quantification of metabolites in serum based on NMR data.

Limitations

If concentration levels are next to the limit of quantification (LOQ), the values might be effected. The values can be impaired if the blood is heavily contaminated with naturally occurring substances.

Expected Turnaround Time

Send-in-Services
The processing of the order begins at the earliest with the arrival of the sample material relevant for the analyses and the associated information. Time of analyses, capacities and delivery times by arrangement (in general: up to 200 Samples in 3 working days).

Performing Laboratory Location:
Regensburg, Germany

Software as a Service (SaaS)
Human samples measured on an inhouse NMR spectrometer qualified by lifespin can be processed via cloud solution. (Turnaround time is 500 samples in less than 25 minutes).

Performing Laboratory Location:
Customer Site

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Useful for

Overall assessment of the current health status

If all metabolites are within the respective reference ranges, the values are ok and rated green. If metabolites are at the borderline or outside the respective reference ranges, rated orange/red, closer or further considerations are recommended. According to peer reviewed literature the metabolites listed below hint to the following health conditions.

Inflammation
Albumin
Glycoprotein A
Glycoprotein B
Histidine

Liver Health
Albumin
Glutamine
Tyrosine
Valine
Leucine
Isoleucine
Phenylalanine

Kidney Health
Albumin
Creatinine
Urea

Gastrointenstinal Tract Health
Albumin
Creatinine
Glycoprotein A
Glycoprotein B
Urea

Muscle Health
Hydroxyvaleric acid
Creatine
Glutamate
Glutamine
Isoleucine
Leucine
Valine

Pancreas Health
Acetone
Glucose
Glycerol
Isoleucine
Leucine
Phenylalanine
Tyrosine
Valine

Neurological Health
Neurotransmitter and Synthesis
Acetate
Choline
Glutamate
Phenylalanine
Tyrosine
Serotonine

Nitrosative Stress
Arginine
Ornithine

Oxidative Stress
2-Hydroxybutyric acid

Energy Metabolism
2-Hydroxyvaleric acid
3-Hydroxybutyric acid
Acetoacetate
Acetone
Glucose
Lactate
Pyruvate

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Reference Ranges

Parameter	Reference Ranges (f) mmol/L	Reference Ranges (m) mmol/L	Reference Ranges (a) mmol/L
Proteins			
Albumin	0.737-0.995	0.736- 1.020	0.736-1.008
Glycoprotein A	0.226-0.376	0.216-0.384	0.219-0.381
Glycoprotein B	0.084-0.157	0.065-0.156	0.071-0.157
Total Protein	0.546-0.719	0.564-0.735	0.553-0.728
Sugars			
Glucose	3.843-6.583	4.129-7.192	3.929-6.947
Mannitol	n.d.	n.d.	n.d.
Mannose	0.031-0.114	0.036- 0.123	0.033-0.123
Myo-Inositol	<0.063	<0.069	<0.067
Keton bodies			
Acetone	0.012-0.063	0.013-0.093	0.013-0.079
3-Hydroxybutyric acid	0.008-0.200	0.008-0.287	0.008-0.249
Acetoacetic acid	0.007-0.066	0.009-0.089	0.008-0.079
Amides & Amines and Derivatives			
Creatinine	0.027-0.086	0.036-0.109	0.030-0.103
Pantothenic acid	n.d.	n.d.	n.d.
Uracil	n.d.	n.d.	n.d.
Urea	1.116-3.754	1.197-3.892	1.141-3.846
Choline	0.002-0.021	0.002-0.022	0.002-0.022
Creatine	0.013-0.071	0.010-0.056	0.011-0.067
Dimethylamine	<0.007	<0.008	<0.008
Dopamine	n.d.	n.d.	n.d.
Ethanolamine	<0.019	<0.020	<0.020
Methylamine	<0.002	<0.002	<0.002
Serotonin	n.d.	n.d.	n.d.
Spermidine	<0.046	<0.049	<0.048
Trimethylamine	<0.002	<0.002	<0.002
Tryptamine	<0.054	<0.053	<0.053
Other Lipids			
Phosphatidylcholine	1.674-3.177	1.543-2.838	1.581-3.008
Sphingomyelin	0.174-1.060	0.199-1.603	0.184-1.385
Sulfones			
Dimethylsulfone	0.005-0.027	0.005-0.026	0.005-0.026

*The reference ranges are derived from the 95% concentration range of 3329 healthy donors (1635 female and 1694 male donors, > 18 years old) wherby the sample handling took place under very controlled conditions. Reference ranges specified by gender, female (f), male (m). If no gender was specified, the gender-neutral reference range for all persons (a) is used. Some metabolites are either not present or can only be found in very small amounts in blood samples of healthy donors and thus the concentration is usually below the limit of detection. In this case the reference range shows n.d..

Parameter	Reference Ranges (f) mmol/L	Reference Ranges (m) mmol/L	Reference Ranges (a) mmol/L
Amino Acids & Derivatives			
1-Methylhistidine	<0.010	<0.011	<0.011
2-Aminoadipic acid	<0.081	<0.109	<0.100
3-Methylhistidine	<0.016	<0.016	<0.016
4-Aminobenzoic acid	n.d.	n.d.	n.d.
Hydroxyproline	n.d.	n.d.	n.d.
alpha- Aminobutyric acid	<0.079	<0.074	<0.078
beta- Aminobutyric acid	<0.019	<0.025	<0.023
Alanine	0.251-0.663	0.263-0.679	0.256-0.673
beta-Alanine	<0.005	<0.007	<0.006
Arginine	<0.032	<0.035	<0.034
Asparagine	<0.057	<0.056	<0.057
Aspartic acid	<0.036	<0.036	<0.036
Betaine	n.d.	n.d.	n.d.
Carnitine	0.005-0.044	0.011-0.051	0.006-0.048
Cystine	<0.065	<0.071	< 0.068
Dimethylglycine	<0.013	<0.016	<0.015
Glutamic acid	0.027-0.083	0.034-0.102	0.030-0.094
Glutamine	0.493-0.889	0.532-0.933	0.506-0.920
Glycine	0.242-0.602	0.255-0.469	0.250-0.563
Histidine	0.054-0.100	0.055-0.101	0.055-0.100
Isoleucine	0.030-0.075	0.034-0.095	0.031-0.089
Leucine	0.110-0.201	0.129-0.250	0.114-0.236
Lysine	0.026-0.084	0.038-0.091	0.034-0.087
Levodopa	n.d.	n.d.	n.d.
Methionine	0.008-0.031	0.009-0.034	0.008-0.033
Ornithine	0.014-0.066	0.027-0.068	0.018-0.067
Phenylalanine	<0.049	<0.051	<0.050
Phosphoserine	n.d.	n.d.	n.d.
Proline	0.057-0.219	0.076-0.261	0.065-0.243
Sarcosine	<0.019	<0.032	<0.027
Serine	0.079-0.192	0.075-0.177	0.077-0.184
Taurine	<0.097	<0.099	<0.098
Threonine	0.041-0.158	0.048-0.163	0.044-0.161
Tyrosine	0.023-0.060	0.027-0-063	0.024-0.062
Valine	0.166-0.313	0.194-0-353	0.173-0.343

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Parameter	Reference Ranges (f) mmol/L	Reference Ranges (m) mmol/L	Reference Ranges (a) mmol/L
Alcohols			
1,2-Propanediol	<0.008	<0.017	<0.012
2-Methyl-1,3-propanediol	<0.009	<0.011	<0.010
2,3-Butanediol	<0.009	<0.019	<0.014
Ethanol	0.012-0.278	0.012-0.353	0.012-0.311
Glycerol	<0.224	<0.186	<0.214
Isopropanol	<0.028	<0.026	<0.027
Methanol	0.024-0.087	0.029-0.105	0.026-0.094
n-Propanol	<0.013	<0.014	<0.014
Tert. Butanol	0.001-0.004	0.001-0.005	0.001-0.005
Organic Acids			
2-Hydroxyisobutyric acid	<0.003	<0.003	<0.003
Acetic acid	0.019-0.113	0.021-0.129	0.020-0.122
Ascorbic acid	<0.075	<0.067	<0.071
Citric acid	0.034-0.467	0.036-0.458	0.035-0.464
Dimethylmalonic acid	<0.004	<0.005	<0.005
Formic acid	<0.023	<0.025	<0.024
Fumaric acid	<0.006	<0.006	<0.010
Glucuronic acid	<0.049	<0.047	<0.048
Itaconate	<0.005	<0.005	<0.005
Lactic acid	0.804-2.168	0.848-2.270	0.826-2.214
Maleic acid	<0.004	<0.004	<0.004
Methylmalonic acid	<0.015	<0.013	<0.014
Propionic acid	<0.007	<0.008	<0.007
Pyruvic acid	0.022-0.078	0.021-0.076	0.022-0.077
Succinic acid	0.004-0.011	<0.015	0.003-0.013
Organic Bases			
Adenine	n.d.	n.d.	n.d.
Hypoxanthine	<0.013	<0.013	<0.013
Inosine	n.d.	n.d.	n.d.
Free Drugs			
free-Ceftazidim	n.d.	n.d.	n.d.
free-Fluconazol	n.d.	n.d.	n.d.
free-Flucytosine	n.d.	n.d.	n.d.
free-Fosfomycin	n.d.	n.d.	n.d.
free-Piperacillin	n.d.	n.d.	n.d.

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