Patient	Xxxx
Date of birht	Xxxx
Sample taken	xxxxx
Receipt of sample	xxxxx
Test completed	xxxx
Final result	**xxxx**
Validated by	Prof. Dr. Brigitte König
Medical Director	Prof. Dr. Gerhard Jorch

MMD GmbH & Co. KG | Breiter Weg 10 a | 39104 Magdeburg

Xxx
xxxx
xxxx
xxxx

RESULTS

Sample type: Blood in CPDA vials

Requisition:
Functional analysis „Fuels“/ PBMC

MITOCHONDRIAL FUEL UTILIZATION

PBMC mitochondria normally take glucose and fatty acids as fuels for ATP generation in approximately equal proportions. Glutamine finds little utilization for ATP generation in PBMC This assay determines dependence, capacity, and flexibility of cells to burn (oxidize) one of the three fuels for energy production using the mitochondria: Glucose, glutamine, or fatty acids.

The following three parameters can be used to assess mitochondrial and cellular health as well as immune status (e.g., chronic inflammation, autoimmune disease):

Dependency: The "Dependency" measured value determines which fuels must necessarily be used for the metabolism of the PBMC. The PBMC are very flexible and should not be directly dependent on any fuel.

- **So, ideally, the PBMCs should not show much dependence on any one fuel.**

Flexibility: For each fuel, the "flexibility" reading shows the difference between the fraction used for metabolism and the fraction available for metabolism (capacity minus dependence).When one fuel is eliminated for energy production, PBMCs should be able to fall back on another fuel.

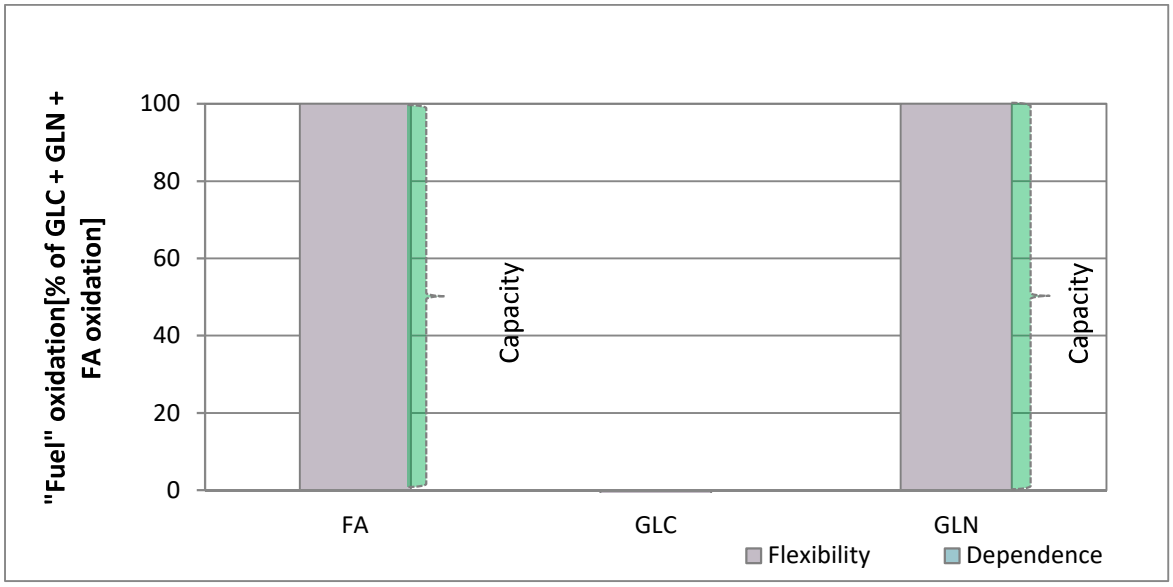
- **Ideally, for glucose and fatty acids, the flexibility is 100%.**

Capacity: The measured value "Capacity" is composed additively of dependence and flexibility. The measured value "Capacity" shows the ability to use a certain fuel to meet the energy demand for metabolism.

- **Ideally, for glucose and fatty acids, the capacity is 100%.**

Patient	Xxxx
Date of birht	Xxxx
Sample taken	xxxxx
Receipt of sample	xxxxx
Test completed	xxxx
Final result	**xxxx**
Validated by	Prof. Dr. Brigitte König
Medical Director	Prof. Dr. Gerhard Jorch

RESULT



FA: Fatty acids; GLC: Glucose; GLN: Glutamine (Amino acids)

DEPENDENCY GROUP	CAPACITY (%)	DEPENDENCE (%)	FLEXIBILITY (%)
GLC-DEPENDENCE / GLUCOSE	0.00	0.00	0.00
GLN-DEPENDENCE / GLUTAMINE	100.00	0.00	100.00
FA-DEPENDENCE FATTY ACIDS	100.00	0.00	100.00

Interpretation of your mitochondrial fuel profile result.

- There is no evidence of effector cells or chronic inflammation.
- What is striking is the non-existent ability of mitochondria to use glucose for energy.
- There is a pronounced flexibility to use amino acids for energy production, which requires further investigation as this is unusual, together with the absence of glucose utilization.