

26126-0458

Lab ID
Patient ID P000060
Ext ID 26126-0458

Sex: Female • 56yrs • 01-Jan-70
123 Home Street, Test Suburb VIC 3125

RECEIVED
06-May-26

Specimen type - Blood-EDTA

5-Apr-26

[illegible][illegible][illegible]

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INTERMEDIARY & FUNCTIONAL METABOLITES

(Functional markers of B-Vitamin status, Urea Cycle, & one-carbon metabolism)

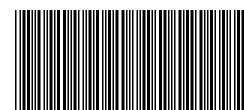
[illegible]

DIETARY PEPTIDE RELATED MARKERS

[illegible]

AMINO ACID FUNCTIONAL RATIOS

SERVICE		RESULT	H/L		REFERENCE	UNITS
40	Phenylalanine/Tyrosine	1.3			(0.0-2.0)	ratio
41	Glutamate/Glutamine	1.03	H		(0.10-0.40)	ratio
42	Hydroxyproline/Proline	0.1			(0.0-0.3)	ratio
43	a-Aminobutyrate/Leucine	0.2			(0.0-0.6)	ratio
44	Tryptophan/LNAAs	0.10			(0.08-0.40)	ratio



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ISOLEUCINE LOW:

Clinical Significance: Low plasma isoleucine may reflect inadequate dietary protein intake, increased muscle catabolism, or malabsorption. Deficiency is associated with fatigue, impaired muscle repair, hypoglycaemia, and reduced immune competence.

Suggested Treatment: Increase intake of isoleucine-rich foods including eggs, meat, fish, soy, and lentils. BCAA supplementation may be appropriate for athletes or individuals with Elevated protein demands. Evaluate for gastrointestinal malabsorption and underlying catabolic conditions.

Description: Leucine is the most anabolic of the essential branched-chain amino acids, serving as a primary activator of the mTOR pathway for muscle protein synthesis.

Clinical Significance: Low plasma leucine is associated with reduced muscle protein synthesis, sarcopenia, impaired recovery from exercise or illness, and poor wound healing. It may reflect inadequate protein intake, malabsorption, or increased catabolic demand.

Suggested Treatment: Ensure adequate dietary protein intake from leucine-rich sources such as meat, dairy, whey protein, and legumes. Leucine supplementation may be beneficial in elderly individuals or those with muscle wasting. Address any underlying gastrointestinal absorption issues.

Description: Lysine is an essential amino acid vital for collagen and carnitine synthesis, calcium absorption, and immune function including antibody production.

Clinical Significance: Low plasma lysine may be associated with inadequate dietary intake (particularly in plant-based diets), malabsorption, recurrent herpes simplex viral infections, or increased metabolic demand. Deficiency can contribute to poor connective tissue integrity, fatigue, anaemia, and impaired immune response.

Suggested Treatment: Increase intake of lysine-rich foods such as meat, fish, dairy, eggs, and legumes. L-lysine supplementation is commonly used to manage herpes simplex recurrence. Evaluate for malabsorption syndromes and adequacy of overall protein intake.

Description: Glutamate is the primary excitatory neurotransmitter and a central metabolic intermediate involved in nitrogen metabolism and the glutamine-glutamate cycle.

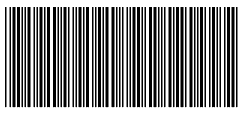
Clinical Significance: Elevated plasma glutamate may reflect mitochondrial dysfunction, excessive dietary glutamate intake (MSG), impaired glutamine synthetase activity, or increased protein catabolism. Elevated glutamate is associated with excitotoxicity risk, anxiety, neurological irritability, and in severe cases with genetic defects of the urea cycle or amino acid transporters.

Suggested Treatment: Assess mitochondrial function and urea cycle activity. Review dietary intake of processed foods Elevated in MSG. Assess magnesium status, as it modulates NMDA glutamate receptor activity. Evaluate alongside GABA for inhibitory/excitatory balance.

Description: Serine is a conditionally essential amino acid critical for one-carbon metabolism, phospholipid synthesis (phosphatidylserine), sphingolipid production, neurotransmitter synthesis, and DNA/RNA nucleotide production.

Clinical Significance: Low plasma serine impairs phosphatidylserine synthesis (affecting neuronal membrane integrity), reduces one-carbon unit availability for methylation reactions, and may compromise sphingolipid production. It is associated with neurological symptoms, impaired cognitive function, and reduced DNA repair capacity.

Suggested Treatment: Increase dietary serine from egg whites, soy, meat, and dairy. L-serine supplementation may be warranted in neurological conditions including serine deficiency syndromes. Evaluate in context of glycine and one-carbon metabolism.



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Description: Alpha-aminoadipate is an intermediate in the lysine degradation pathway and a B-vitamin (particularly B6, B2, and niacin) metabolism marker.

Suggested Treatment: Review dietary lysine intake. Assess B-vitamin status, particularly B6, B2, and niacin. Ensure adequate overall dietary protein.

Description: Ornithine is a central intermediate in the urea cycle, accepting carbamoyl phosphate to form citrulline, and is also a precursor to proline, polyamines, and glutamate.

Suggested Treatment: Assess arginine and citrulline status concurrently. Evaluate liver function and urea cycle activity. L-ornithine supplementation or ornithine alpha-ketoglutarate (OAK) may support urea cycle function and recovery.

Description: Hydroxylysine is formed by post-translational hydroxylation of lysine in collagen and elastin by lysyl hydroxylase (procollagen-lysine 2-oxoglutarate 5-dioxygenase), a vitamin C- and iron-dependent enzyme.

Suggested Treatment: Ensure adequate vitamin C (as ascorbate), iron, and lysine intake to support lysyl hydroxylase activity. Collagen hydrolysate or bone broth supplementation may provide hydroxylysine directly. Address any deficiencies identified in related nutrients.

Description: The Glutamate/Glutamine ratio reflects glutamate-glutamine cycling and neurotransmitter balance, with glutamine synthetase converting glutamate to glutamine and glutaminase reversing this reaction.

Suggested Treatment: Address excitatory/inhibitory neurotransmitter balance by supporting GABA synthesis (B6, magnesium, taurine). Reduce dietary glutamate/MSG exposure. Evaluate mitochondrial function. Magnesium supplementation helps modulate NMDA receptor sensitivity to glutamate.

Liquid Chromatography-Mass Spectrometry (LC-MS/MS/MS)