



METAMETRICS
LABORATORY

NEURO NUTRIENT TEST

Examine the levels of key nutrients that influence brain health and function.

Why You Need Neuro Nutrient Testing

The Role of Micronutrients for Proper Brain Function

Certain nutrients are vital for brain development and function, where nutrient deficiencies or imbalance can be linked to neurodegenerative disorders. For example, neurotransmitter and neuromodulator chemicals such as dopamine, acetylcholine, noradrenaline, and serotonin are needed to transfer signals between cells, while protein is a precursor to the production of serotonin that regulates mood and emotions.

Neuro-related problems can be difficult to diagnose due to the complex pathways of the nervous system, where symptoms of a brain condition can show up in another part of the body. Valuable information for clinical assessment and treatment of a patient can be obtained from measuring brain-essential nutrients.

The Impact of Neuro Nutrient Testing

This test provides clinicians with accurate and actionable assessment of critical nutrients, allowing for personalized dietary and supplementation protocols that will help in treating mood or neurodegenerative disorders.

- ✓ Measures the level of 6 micronutrients, 24 amino acids (essential, non-essential, and conditional amino acids), and 18 essential fatty acids (omega-3, -6, and -9, 2 saturated fats, and AA/EPA and omega-3 to -6 ratios)
- ✓ Identifies micronutrient imbalances that contribute to brain health and proper function, as well as development of neurodegenerative disorders

Specific nutrients influence cognition by acting on molecular systems or cellular processes that are vital for maintaining cognitive function.¹



NEURO NUTRIENT TEST

Analytes Tested:

Protein (measured via Amino Acid Panel) is a neurotransmitter for relaying information between brain cells. Inadequate amino acids can lead to low levels of dopamine and serotonin that can result in depression or aggressive behavior.²

Cobalamin (or vitamin B12) is crucial for proper function and development of the brain and nerve cells. It ensures fast and effective nerve-impulse transmission by helping protect brain nerves.³ Deficiency can cause neurological and psychiatric problems in adults, which include delusions, hallucinations, depression, and dementia. It is also linked to the irreversible progressive myeloneuropathy, which is difficult to diagnose.⁴

Magnesium acts as the gatekeeper for NMDA receptors, which are involved in healthy brain development, memory, and learning. It prevents overstimulation that can kill nerve cells and cause brain damage.⁵ Deficiency can lead to increased anxiety and panic, restlessness, poor sleep, and irritability.⁶

Selenium is an essential nutrient that our bodies cannot produce. Sufficient levels can help reduce the progression of neurodegenerative diseases like Alzheimer's, Huntington's, and Parkinson's. Declining levels of this mineral is linked with age-related mental issues.⁷ Deficiency has been linked to poor cognition, memory problems, and adverse mood states.⁸ Conversely, toxic levels over time can lead to selenosis (hair loss, nail loss, nausea, irritability, fatigue, and nerve damage).⁹

Vitamin D plays multiple roles in brain health, including brain and nervous system development, and postponing memory decline.¹⁰ Shortage of this vitamin affects structural brain connectivity, learning, and memory.¹¹ Deficiency has also been linked to depression, anxiety, and a host of other mental health symptoms.¹²

Essential Fatty Acids are associated with auditory and visual development.¹³ They are crucial for proper neural activity, as the brain is made up mostly of fat. Omega-3 fatty acids, specifically DHA and EPA, support healthy brain function, where low levels can lead to unstable moods, depression, anxiety, poor focus and attention, and more.¹⁴

COQ10 or Coenzyme Q10 is a compound that helps generate energy in your cells. It protects brain cells from oxidative damage and reduces the action of harmful compounds, possibly slowing the progression of Alzheimer's and Parkinson's disease.¹⁵

Lipid Peroxide is a direct marker of oxidative damage to polyunsaturated fatty acids (or PUFA) found in the neurons that play an important role in maintaining neuronal functions. Lipid peroxidation increases in many disease states or during oxidative stress, resulting in cellular damage.¹⁶

1 Health Engine. 2010. Nutrition and Brain Health. Health Engine. Retrieved March 4, 2020 (<https://healthengine.com.au/info/nutrition-and-brain-health>)

2 Wolff, Carina. 2018. How Nutrient Deficiencies Can Affect Your Mental Health. Bustle. Retrieved March 4, 2020 (<https://www.bustle.com/p/how-nutrient-deficiencies-can-affect-your-mental-health-11194369>)

3 See Footnote 2

4 World Health Organization. 2007. Neurological Disorders Associated with Malnutrition. Neurological Disorders: Public Health Challenges. World Health Organization Press. Geneva, Switzerland

5 Arundine M. & Tymianski M. 2003. Molecular mechanisms of calcium-dependent neurodegeneration in excitotoxicity. Cell Calcium 34 (4-5). U.S. National Library of Medicine National Institutes of Health. USA.

6 See Footnote 2

7 Aleksic, Ana. 2020. 10 Selenium Benefits + Sources, Dosage & Toxicity. Selfhacked. Retrieved March 5, 2020 (<https://selfhacked.com/blog/health-benefits-selenium/>)

8 See Footnote 4

9 Cox, Lauren. 2017. What Are Selenium Supplements?. Live Science. Retrieved March 5, 2020 (<https://www.livescience.com/43566-selenium-supplements-facts.html>)

10 See Footnote 2

11 Brooks, Megan. 2019. Vitamin D Deficiency a Brain Disruptor. Medscape. Retrieved March 5, 2020 (<https://www.medscape.com/viewarticle/909883>)

12 See Footnote 2

13 See Footnote 2

14 See Footnote 2

15 Wadsworth, T., Bishop, J., Pappu, A., Woltjer, R., & Quinn, J. 2008. Evaluation of Coenzyme Q as an Antioxidant Strategy for Alzheimer's Disease. J Alzheimer Dis 14(2)

16 Maruyama, W., Shaomoto-Nagai, M., Kato, Y., Hisaka, S., Osawa, T., & Naoi, M. 2014. Role of Lipid Peroxide in the Neurodegenerative Disorders. Subcellular Biochemistry.

TEST INFORMATION

Specimen : 25 ml. whole blood
Result TAT : 7 working days
Method : UPLC, Microassay, ICP-MS, LC-MS/MS, GC, HPLC

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