MACHEMEHL METHOD INSTITUTE

Prepared for: Sample Report HPAF2
Date of Birth: 9/1/1988

Reported On: 4/10/2026

Neuro HPA Focus 2

Parameters	Your Results (4/10/2026)	Reference Range	Plays a Role In
Serotonin IV	43.8	63.7-105.1	Sleep cycle, depression, anxiety, carbohydrate cravings, PMS
Dopamine IV	232.7	137.0-306.3	Focus, attention, memory, motivation/drive, mood, addictive disorders
Norepinephrine IV	20.8	17.8-41.0	Energy, drive, stimulation, "fight or flight "response, sleep cycle disturbances anxiety
Epinephrine IV	1.2	1.5-4.2	"Fight or flight" response, metabolism, energy, depression, cognitive function.
Norepi/Epi Ratio	17.3	3.0-6.0	Ratios < 3 = restlessness, over-training Ratio > 6 = stress, tiredness, lack of focus, energy & motivation, "burn out"
GABA IV	8.4	4.4-9.8	Reduces excess stimulation. Anxiety, nervousness, restlessness, and sleep cycle
Glutamate IV	49.3	16.7-34.4	Agitation, impulsivity, anxiety, focus issues, sleep cycle disturbances, tics, migraines, headaches when elevated. Depression when low.
Histamine II	48.3	14.0-44.0	Responds to allergy and inflammation, low levels cause lethargy. High levels can contribute to poor concentration, focus, or memory, attention issues.
5HTP IV	60.7	30.4-63.9	The amino acid precursor in the synthesis of serotonin
Creatinine I	74	60.0-284.0	Determines whether sample is viable for testing (hydration/dehydration)
Cortisol I (6-8 am)	7.39	3.0-9.7	Energy, anxiety, irritability, cravings, mood, cognitive function, metabolism
Cortisol II (Noon)	2.52	1.0-3.5	Energy, anxiety, irritability, cravings, mood, cognitive function, metabolism

Prepared for: Sample Report HPAF2 **Reported On:** 4/10/2026

Cortisol III (4 pm)	2.01	0.6-2.0	Energy, anxiety, irritability, cravings, mood, cognitive function, metabolism
Cortisol IV (8 pm)	0.87	0.0-0.9	Anxiety, nervousness, restlessness, sleep cycle
Cortisol V (Midnight)	0.64	0.4-6.0	Restlessness, sleep cycle
Cortisol VI (4am)	1.15	0.9-6.1	Restlessness, sleep cycle
DHEA(s) I (8am)	16.00	2.8-12.7	Energy, drive, motivation, mood, libido, muscle mass, cognitive function
DHEA(s) II (8pm)	2.49	2.7-9.0	Energy, drive, motivation, mood, libido, muscle mass, sleep cycle
DHEA(s) III (12am)	1.45	1.8-8.1	Energy, drive, motivation, mood, libido, muscle mass, sleep cycle

MACHEMEHL METHOD INSTITUTE

Prepared for: Sample Report HPAF2 **Reported On:** 4/10/2026

Suggested Protocol

Supplement	Morning Dosage	Lunchtime Dosage	Afternoon Dosage	Dinner Dosage	Before Bed Dosage
***M² 5-HTP 100mg**					
Daily	1 capsule(s)				
***M² 5-HTP 50mg**					
Daily for Week 1					
Daily for Week 2					
Daily for Week 3	1 capsule(s)				
Daily for Week 4 and After	1 capsule(s)				
***M² Adrenal + C**					
Daily	1 capsule(s)			1 capsule(s)	
***M² MagComplex**					
Daily for Week 1	1 capsule(s)				1 capsule(s)
Daily for Week 2	1 capsule(s)				2 capsule(s)
Daily for Week 3	1 capsule(s)				2 capsule(s)
Daily for Week 4 and After	1 capsule(s)				2 capsule(s)

Prepared for: Sample Report HPAF2 **Reported On:** 4/10/2026

*M² Methyl B Complex					
Daily	1 capsule(s)				
*M² Neuro Nutrients 3					
Daily	1 capsule(s)			1 capsule(s)	
*M² Omega + 850 (120 ct)					
Daily	1 softgel(s)			1 softgel(s)	
*M² Theanine 200					
Daily	1 capsule(s)				1 capsule(s)
NuMedica DHEA 5mg					
Daily				1 capsule(s)	

Clinical Notes

Alcohol: The liver, in conjunction with various enzymes, vitamins, and minerals, are responsible for metabolizing alcohol in the body. Drinking alcohol decreases the amounts of b-vitamins, vitamin C, and zinc in the body which are key co-factors for numerous metabolic processes including the production of neurotransmitters, proper wound healing, and a healthy immune system. Because alcohol also acts as a diuretic, meaning it increases urination, electrolyte balance (sodium, chloride, magnesium and potassium) is also disrupted. The increased loss of these vital nutrients can lead to fatigue, experiencing a low mood, poor focus and concentration.

Prepared for: Sample Report HPAF2 **Reported On:** 4/10/2026

Clinical Notes

- Alcohol: Because of alcohols effects on the release of GABA some may find that having a glass of wine before bed helps them fall asleep but to only wake up a few hours later. While alcohol does help getting into the initial phase of sleep faster, it tends to end up disrupting the latter phase which can result in waking in the middle of the night. Getting less hours of the restorative REM sleep can leave you feeling tired and less refreshed in the morning.
- Causes for neurotransmitter imbalances include genetics, stress, anxiety, excessive worries, lack of physical exercise or movement, excess alcohol intake, lack of sleep, poor nutrition, excess caffeine intake, trauma, and a lack of balance/rest/restoration.
- Cortisol: The adrenal glands, located on top of each kidney, are responsible for releasing hormones such as cortisol, DHEA and sex hormones that help the body control blood sugar, regulate blood pressure, respond to stressors and metabolize fat and protein. Our body's natural rhythm of cortisol should naturally be at its highest within 30 minutes of waking up in the morning, and should decrease at a steady rate throughout the day, before reaching the lowest levels at night.
- Cortisol: When the adrenal glands are under stress, cortisol (our stress hormone) production begins to increase. Over time, the body cannot keep up with this demand, so it begins to compensate by stealing from DHEA to make cortisol. This compensation can contribute to the depletion of our sex hormones including estrogen, progesterone and testosterone.
- DHEA: Elevated levels of DHEA in females may occur with DHEA supplementation, PCOS, or adrenal/androgen dysfunction. It is common to see higher levels of DHEA in athletes. Symptoms associated with elevated DHEA include oil skin, increased hair growth, irregular periods, headaches, nausea, smaller breast size, deep voice and sleep issues.
- DHEA: Low levels of DHEA may occur when the adrenals are fatigued or with pituitary dysfunction. DHEA levels may tend to be lower in those with heart disease, depression, diabetes, osteoporosis or dementia, but also if there are imbalances in testosterone. Symptoms associated with low DHEA include low energy and libido, joint aches/pains, hair loss, mood issues, trouble losing weight, lowered immunity, and/or a decrease in bone density.
- An evening dose of GABA was included in this regimen to help with sleep cycle. If you have difficulty waking up during the night, an additional dose can be taken at that time.

Clinical Notes

- Glutamate: Elevated levels of glutamate can be related to the diet, which is why we included the note about MSG. However, there are also natural sources of glutamate too. Beets, bone broth, eggs, spinach, tomatoes and asparagus are some of the foods with naturally higher glutamate content. It is an assumption since we do not know dietary habits when reviewing the results. Supplementing with a protein powder with added glutamine or glutamic acid can increase glutamate levels. L-Glutamine is an amino acid precursor to glutamate and can increase glutamate levels in a neurotransmitter panel when taking this supplement. There are also genetic causes for increased levels of glutamate as well. The enzyme known as glutamic acid decarboxylase (GAD) in some people does not work as efficiently as others which can cause an increase in glutamate due to the lowered ability to metabolize it to GABA. When someone has experienced traumatic stress or a head trauma glutamate levels also rise. Caffeine can also increase glutamate activity as well.
- Glutamate: Excess glutamate can result in increased agitation, impulsivity, and anxiety when elevated. MSG and DSG are common constituents of processed foods and are often used as flavor enhancers in prepared foods. MSG and DSG can exacerbate glutamate and should be strictly avoided.
- Gut Health: Scientists consider the gastrointestinal tract the second brain (enteric nervous system). This is because it contains a network of millions of nerve cells called neurons hidden in the walls of the digestive tract that control the functions of the gastrointestinal (GI) tract, but also communicates with the brain. Gut health plays a crucial role in our ability to properly absorb nutrients and can affect every other system in the body, including the nervous system. Poor gut health can adversely affect both the synthesis and utilization of neurotransmitters and can be a large factor with neurotransmitter imbalances.
- Histamine: The histamine measured in this test is specific for the gastrointestinal (GI) tract and is not influenced by environmental allergens or pollen. Elevated histamine levels are indicative of a GI allergy or inflammation. A GI allergy or inflammation can be the result of a food sensitivity and/or imbalance in gut flora. Dietary changes may be necessary to reduce histamine and improve overall gut and brain health.
- Neurotransmitter Explanation II: Please note that all parameters are calculated around creatinine. Higher creatinine levels will result in lower values for neurotransmitters across the board. Lower creatinine will result in higher values across the board. It is important to note that it is the ratio between specific neurotransmitters and not the individual parameters that are being assessed.

Prepared for: Sample Report HPAF2 **Reported On:** 4/10/2026

Clinical Notes

- Probiotics: The balance of bacteria in the gastrointestinal (GI) tract is often disrupted by stress, excessive alcohol intake, exposure to toxins, diets high in processed foods and low in fiber, antibiotic therapy or certain medications which can lead to symptoms such as gas and bloating. Colonizing a healthy layer of beneficial bacteria in the gastrointestinal tract with probiotics can strengthen the immune system, improve digestion, promote bowel regularity, facilitate mineral absorption, help your body make vitamins (B and K) and properly metabolize cholesterol. To get your good probiotic bugs to stick around, eat daily servings of prebiotic- and probiotic-rich foods such as kefir, yogurt (dairy or nondairy), sauerkraut, kimchi, tempeh, and kombucha.
- A retest is recommended in 3 months to ensure neurotransmitter levels are recuperating. Please test neurotransmitters only at that point. It takes between 3 and 6 months to see measurable improvements in the salivary adrenal panel.
- A retest is recommended every 3 months to gauge your progress.
- Serotonin: Ideally there should be 50% as much serotonin as dopamine. When the ratio between serotonin and dopamine is out of balance it can contribute to issues with cravings, focus, anxiety and depression.
- Serotonin: Low serotonin and frequent headaches correlate highly with gluten sensitivity. Gluten is a sticky protein that impairs absorption by adhering to the lining of the GI tract. If not already doing so, please consider removal of gluten from your diet.
- Stress can generally be divided into several categories by intensity and duration. Acute stress, episodic acute stress, and chronic stress each have a different effect on the body and how it responds. Different types of stressors, from emotional situations to food sensitivities can negatively impact the brain, gut and hormones leaving you wondering what happened to your youth and zest for life.

Lifestyle Notes

- When the adrenal glands are stressed, try to avoid stimulants such as caffeine (coffee, energy drinks, etc.), guarana, kola nut, and licorice root as they can be too stimulating for the adrenals which may cause sleep disturbances or anxiety.

Lifestyle Notes

- Diet: Consuming a protein rich snack before bedtime may help improve sleep cycle disturbances. Consider eating a light snack before bed such as hummus with veggie sticks, a handful of nuts or seeds, quinoa with avocado, nut butter or bean dip with gluten-free crackers, or a turkey roll up.
- Avoid foods and beverages that exacerbate anxiety. Caffeine containing beverages such as coffee, tea and soft drinks are stimulants that can exacerbate the physical symptoms of anxiety. Caffeine increases stress hormones such as adrenaline and cortisol contributing to feeling jittery, with an increase in heart rate, blood pressure, and blood sugar levels. Avoid sugar as much as possible. Sugary foods such as candy, cake, pastries, ice cream, sweet drinks, and refined carbohydrates such as white flour products can result in blood sugar imbalances which can often cause or aggravate anxiety.
- Glutamate: Foods that contain Monosodium Glutamate (MSG) should be avoided when glutamate levels are elevated. Products that commonly contain added MSG include chips, seasoning mixes, canned soups, fast food, and other prepared or processed foods. Be sure to read food labels carefully. MSG may be listed as Monosodium Glutamate, Hydrolyzed Vegetable Protein, Hydrolyzed Protein, Hydrolyzed Plant Protein, Plant Protein Extract, Sodium Caseinate, Calcium Caseinate, Yeast Extract, Textured Protein, Autolyzed Yeast or Hydrolyzed Oat Flour. Terms that indicate hidden MSG additives include Malt extract, Bouillon, Broth, Stock, Flavoring, Natural Flavoring, Natural Beef or Chicken Flavoring, Seasoning, or Spices.
- Foods high in histamine to reduce and/or avoid include aged foods such as aged cheeses, cow's milk, vinegar, smoked meats, fermented foods, canned foods and leftovers. Bananas, chocolate, peanuts, cashews, walnuts, papaya, pineapple, shellfish, strawberries, tomatoes and wheat germ should also be limited.
- A reduction in gluten containing foods is encouraged when serotonin is low. Gluten adheres to the gut wall preventing some of the absorption of serotonin into the blood stream.
- Sleep Cycle: Establish a regular sleep routine. Mindfulness meditation or yoga before bed can promote relaxation. Avoid eating large meals 2 hours before bedtime. Avoid drinking too many fluids close to bedtime as this can result in unnecessary trips to the bathroom; disrupting sleep cycle. Avoid stimulants such as caffeine and chocolate after 12 pm. Avoid electronics that emit blue-light at least 1 hour before bed (TV, cellphones, tablets, video games).
- Sleep: Adults should aim to get 7-9 hours of uninterrupted sleep each night. Experts estimate that preschoolers (3 to 5 years-old) need 11-13 hours of sleep, while school-aged children up to age 12 need approximately 10-11 hours of sleep. Teens need at least 9 hours.

Lifestyle Notes

- Sleep: The body is naturally inclined to rise with the sun and rest when it becomes dark. With the increase exposure to technology, having resources available 24 hours a day and excess stimulation (distractions, environments, diets, activities) it can be hard to fall asleep with ease. The human body produces melatonin (the sleep hormone) when there is an absence of light which is why we get tired. Too much light suppresses melatonin (even from electronic screens).
- The human body is composed of two-thirds water. Water is required for every cell, organ and tissue to transport oxygen and nutrients around the body, and to regulate temperature. It is vital for joint lubrication, detoxification, energy production, and healthy hair, skin and nails. Aim to get half your body weight in ounces of water daily. Add lemon, cucumber, mint or berries for flavor. If you exercise or spend time outdoors in a hot climate, more water is needed.

Lab Descriptions

Serotonin IV

An inhibitory neurotransmitter, often referred to as the master neurotransmitter, that plays a role in sleep cycle, depression, anxiety, carbohydrate cravings, and PMS.

Dopamine IV

Dopamine is our focus or joy related neurotransmitter. When dopamine is either elevated (inefficient) or low, symptoms of poor focus or memory, attention issues or poor stress response can be noted.

Norepinephrine IV

An excitatory neurotransmitter that is responsible for stimulatory processes in the body. Norepinephrine also converts epinephrine. This neurotransmitter can cause anxiety at elevated excretion levels, as well as some "mood dampening" effects. Low levels of norepinephrine are associated with low energy and decreased focus ability. Elevated norepinephrine levels can also cause elevated blood pressure.

Epinephrine IV

An excitatory neurotransmitter involved in the body's "fight or flight" response and regulates brain functions such as metabolism, heart rate, and blood pressure. This neurotransmitter will often be elevated when hyperactivity or anxiety is present. Long-term over-stimulation can cause epinephrine levels to be depleted. Epinephrine also regulates heart rate and blood pressure.

Norepi/Epi Ratio

Provides insight into how well the body is coping with stress (adrenal glands). Ratios less than 3 can cause restlessness and/or be due to over-training. Ratios greater than 10 may indicate stress, tiredness, lack of focus, lack of energy & motivation, and burn out.

GABA IV

An inhibitory neurotransmitter that is often referred to as nature's valium-like substance. GABA reduces excess stimulation.

Lab Descriptions

Glutamate IV

Glutamate is an excitatory or stimulating neurotransmitter that is reflective of stress. It plays a role in focus. If Glutamate is elevated, one should check labels of foods that are being consumed since MSG (monosodium glutamate) and the many names that it is called as a food additive can be the culprit. Excess glutamate levels can cause significant anxiety, restlessness, sleep cycle disturbances, tics, migraines and headaches. The body will excrete more glutamate when serotonin is low as well.

Histamine II

Histamine is a stimulating neurotransmitter that plays a role in responding to inflammation or allergy. Low levels of histamine are indicative of fatigue.

5HTP IV

A naturally occurring amino acid and chemical precursor as well as a metabolic intermediate in the biosynthesis of the neurotransmitter serotonin. Low levels may be related to poor serotonin synthesis. Elevated levels are typically related to supplementation of 5HTP.

Creatinine I

A measurement in urine which determines whether a sample is viable for testing (hydration/dehydration). Please note that all parameters are calculated around creatinine. Higher creatinine levels will result in lower values across the board. Lower creatinine will result in higher values across the board.

Cortisol I (6-8 am)

Saliva measurements of the body's main stress hormone, cortisol, is used to gain insight into how the body responds to stress. In a healthy individual, cortisol should be higher in the morning and gradually taper off throughout the day. This pattern is referred to as the circadian rhythm. If waking cortisol is low, it indicates that the adrenals do not rejuvenate overnight, resulting in feeling tired upon waking and can contribute to fatigue.

Lab Descriptions

Cortisol II (Noon)

Saliva measurements of the body's main stress hormone, cortisol, is used to gain insight into how the body responds to stress. In a healthy individual, cortisol should be higher in the morning and gradually taper off throughout the day. This pattern is referred to as the circadian rhythm. When cortisol drops more than 50% between 6-8 am and 12 pm this can be indicative of gastrointestinal (GI) distress

Cortisol III (4 pm)

Saliva measurements of the body's main stress hormone, cortisol, is used to gain insight into how the body responds to stress. In a healthy individual, cortisol should be higher in the morning and gradually taper off throughout the day. This pattern is referred to as the circadian rhythm. An increase in cortisol at this time could be related to work stress or caffeine consumption.

Cortisol IV (8 pm)

Saliva measurements of the body's main stress hormone, cortisol, is used to gain insight into how the body responds to stress. In a healthy individual, cortisol should be higher in the morning and gradually taper off throughout the day. This pattern is referred to as the circadian rhythm. If cortisol is elevated in the evening it can be associated with restlessness and sleep cycle disturbances.

Cortisol V (Midnight)

Saliva measurements of the body's main stress hormone, cortisol, is used to gain insight into how the body responds to stress. In a healthy individual, cortisol should be higher in the morning and gradually taper off throughout the day. This pattern is referred to as the circadian rhythm.

Cortisol VI (4am)

DHEA(s) I (8am)

DHEA is one of the main stress hormones involved in healthy hormone metabolism. DHEA is part of the stress response as it relates to cortisol, and also part of the pathway for producing sex hormones such as testosterone, estrogen, and progesterone. Saliva measurement of DHEA is used to gain insight into how the body responds to stress.

Lab Descriptions

DHEA(s) II (8pm)

DHEA is one of the main stress hormones involved in healthy hormone metabolism. DHEA is part of the stress response as it relates to cortisol, and also part of the pathway for producing sex hormones such as testosterone, estrogen, and progesterone. Saliva measurement of DHEA is used to gain insight into how the body responds to stress.

DHEA(s) III (12am)

DHEA is one of the main stress hormones involved in healthy hormone metabolism. DHEA is part of the stress response as it relates to cortisol, and also part of the pathway for producing sex hormones such as testosterone, estrogen, and progesterone. Saliva measurement of DHEA is used to gain insight into how the body responds to stress.

Product Descriptions

- 5-HTP is the amino acid intermediate to the mood regulating neurotransmitter serotonin. 5-HTP crosses the blood brain barrier converting into serotonin in serotonin producing nerve cells. Besides benefiting mood, supporting serotonin levels can also help fight sugar and carbohydrate cravings and improve sleep quality by converting into melatonin. Melatonin is a hormone that regulates the sleep/wake cycle.
- 5-HTP is the amino acid intermediate to the mood regulating neurotransmitter serotonin. 5-HTP crosses the blood brain barrier converting into serotonin in serotonin producing nerve cells. Besides benefiting mood, supporting serotonin levels can also help fight sugar and carbohydrate cravings and improve sleep quality by converting into melatonin. Melatonin is a hormone that regulates the sleep/wake cycle.
- Vitamin C plays a significant role in improving adrenal health. Excessive cortisol excretion can be suppressed by Vitamin C supplementation. Vitamin C is also a critical for adrenal function. Your body's highest levels of vitamin C are found in the adrenal glands and brain tissues, and the urinary excretion of vitamin C is increased during stress. Vitamin C also acts as a mast cell inhibitor and can help to reduce histamine when it is excreting in excess. Excessive histamine can cause an elevation in anxiety and restlessness.
- Magnesium is an essential mineral responsible for over 300 enzymatic reactions in the body including neuronal activity, cardiac health, bone metabolism, hormone regulation, relaxation, activation of muscle tissue, and energy (ATP) production. Magnesium helps to reduce excessive glutamate excretion and supports the adrenals. Magnesium is a smooth muscle relaxer and will also help to keep bowels regular. MagComplex is a blend of three bio-available forms of magnesium, designed to provide optimal absorption and utilization of magnesium, while being gentle on bowels. Each capsule contains 125 mg of magnesium.
- Methyl B Complex is a comprehensive formula designed to support optimal methylation. This formula supports pathways that utilize methylated B vitamins for optimal function.
- Neuro Nutrients 3 contains optimal amounts of many nutrients not easily obtained in most diets. It uses higher quality ingredients than most multivitamins, including vitamin E as high gamma mixed-tocopherols, a proprietary NatureFolate™ blend of active isomer naturally-occurring folates, and TRAACS® true amino acid chelate minerals for optimal tolerance and absorption. These exceptional ingredients are combined in an up-to-date, science-based formulation to create a truly superior multivitamin.*

Product Descriptions

- EPA and DHA from fish oil promote cardiovascular health by supporting optimal triglyceride and cholesterol levels and reducing platelet aggregation. Fish oil has also been shown to promote optimal joint function and overall brain and nervous system function.
- Theanine 200 is an amino acid that is naturally found in green tea. Theanine200 promotes calming alpha brain wave activity, promotes relaxation and increases mental acuity.
- DHEA is a hormone produced by the adrenal glands that serves as a precursor to testosterone, estrogen, and progesterone. DHEA and Cortisol both share the parent hormone Pregnenolone. Since the body cannot live without cortisol, it is common to see DHEA levels fall especially during times of stress as the body will "steal" pregnenolone from DHEA production to favor the cortisol pathway. The end result is overall decreased production of the hormones testosterone, estrogen and progesterone.