

or not neurotransmitters exist in the urinary pool is irrefutable. Recent advances in clinical laboratory technology now provide reliable, cost-effective, and convenient methods for measuring neurotransmitters in clinical settings. A brief review of scientific literature yields a plethora of studies investigating urinary neurotransmitters as correlates of a wide variety of neurological and psychiatric disease states. A comprehensive review of the literature is beyond the scope of this article, however, those interested in more information should contact NeuroScience, Inc. Visit www.neuroscienceinc.com for a concise review of evidence pertaining to the clinical relevance of urinary neurotransmitter measurements.

Timing neurotransmitter collection

Neurotransmitter testing is not a “one-size-fits-all” treatment protocol, rather it serves as a tool to assess a patient’s individual biochemistry at that given moment in time. So if you, as a clinician, desire to assess a patient’s daytime symptoms such as fatigue, anxiety, or attention difficulties, it is best to perform a morning urine sample, but if your patient suffers from insomnia, then a nighttime sample will be most helpful. As a clinician I was always taught to examine, treat and then re-examine in order to observe objective and subjective changes, for better or worse. Consequently, I believe that baseline neurotransmitter testing is helpful to clinicians to understand where a patient was prior to intervention and where they are headed after follow-up neurotransmitter testing is performed. It is difficult to comprehend where a treatment plan is going if you do not know where you have come from. This is the value of a detailed patient history and objective laboratory measurements at the beginning of any new therapeutic protocol.

Amino acids influence neurotransmitter synthesis and excretion patterns

Amino acids, the precursors to neurotransmitters, circulate both peripherally and centrally. Both the central and peripheral nervous systems produce neurotransmitters from the same common amino acids. Consequently, supplementation with specific amino acids has the ability to improve central *and* peripheral nervous system neurotransmitter stores and support other neurotransmitter synthesis sites including the intestine and adrenal glands. I believe urinary neurotransmitter testing is the best objective measurement we as clinicians currently have available to guide amino acid supplementation protocols.

Case Study

The following case is an example of both the power of neurotransmitter/hormone biomarker testing as well as the benefit of using specific amino acids to best support your patients’ neurochemical balance.

The patient was a 41 year old male, married, father of two and self-employed. He presented to me with anxiety, fatigue and various physical pain complaints. He reported the anxiety began one year previously, initiated by a panic attack that involved elevated heart rate, elevated respiration, sweating and clammy skin. These symptoms were severe enough to require hospitalization five times in the past year for similar panic attacks. He also stated that during these episodes, he was clear headed and did not feel anxious, but his body was clearly in “panic mode”. He detailed his energy levels as “feeling good only a few hours per day” and then feeling so fatigued that he wanted nothing more than to sleep. He reported that his peak energy of the day was between 9pm and midnight. He has a history of chronic asthma, chronic sinusitis with year-round allergies and three nasal polyp surgeries in the last nine years. He also reported irritable bowel syndrome and insomnia, and explained that falling asleep was easy but he would wake 3-4 times per night. He stated that it was currently difficult to lose weight even if he ate less and dairy-free. He had a full cardiac work-up, upper and lower GI scope and a thyroid work-up which he reported were all negative. His medications included Advair, Allegra D, Xanax, Paxil and Bisoprolol. He also commented that he had taken prolonged antibiotics and nasal steroids seasonally for years secondary to his sinusitis, but was not currently on either type of medication. His NeuroEndocrine Panel results are on the next page.

These reports can be viewed from three angles: androgen hormones, adrenal hormones and neurotransmitters: excitatory/inhibitory. Each of these three areas have the opportunity to present as optimal, low or elevated. This information provides insight into a patient’s metabolic state. Is this patient experiencing acute or chronic stress responses as evidenced by their biomarkers? Is it best to support this patient’s androgen hormones, adrenal hormones (DHEA and cortisol), adrenal neurotransmitters (epinephrine and norepinephrine), or additional neurotransmitters (excitatory, Inhibitory, or both)? Patients, such as with this example, who have experienced anxiety/panic attacks, fatigue, pain syndromes and insomnia can present with many different biomarker combinations depending on their individual severity of metabolic fatigue. This clearly illustrates why it is so beneficial to practitioner and patient alike to perform an initial test.

With this patient I thought it best to support his DHEA (15mg with breakfast), cortisol (Isocort-2 pellets with breakfast), serotonin/GABA (Travacor 2 capsules at bedtime), adrenal neurotransmitter support (Adreacor-work up to 2 capsules BID prior to breakfast and lunch). I also recommended 2-3 grams Omega-3 fish oils/day and 100 billion multistrain probiotics/day.

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