
Clinical Relevance of Neurotransmitter Testing

by: Dr Scott Theirl

Submitted by: NeuroScience, Inc.

There are many differing professional opinions on the subject of urinary neurotransmitter testing and the subsequent use of amino acid supplements to help optimize neurotransmitter stores in the body. I believe these varied opinions are simply due to the newness of the testing protocols and the debate will drive further research and development much more quickly. This push for research and development will ultimately benefit patients, but in the meantime, practitioners are left to decide which side of the debate they choose to be on. This can be both confusing and frustrating as science continues to sort out the most efficient ways of helping our patients.

Basic facts concerning neurotransmitters

- Neurotransmitters are very important for overall health and specifically for nervous system function.
- Urinary neurotransmitter measurement has existed for decades.
- Amino acids are the building blocks of neurotransmitters and some can cross the blood-brain barrier.
- Neurotransmitters are synthesized in many areas of the body including the central nervous system, the peripheral nervous system, the kidneys, the gastrointestinal tract, and the adrenal glands.
- Intact neurotransmitters are filtered by the kidneys resulting in the ability to measure them in the urine.
- Adding specific amino acid supplements can alter urinary neurotransmitter values.
- Adding specific amino acid supplements may benefit patients by reducing neurologic symptoms.

Primary considerations regarding neurotransmitter assessment

- Where are the neurotransmitters in the urine coming from?
- Is there sufficient *clinical* correlation between urinary neurotransmitter testing, patient symptoms, and patient outcomes to support testing?
- Is there sufficient *scientific* correlation between urinary neurotransmitter testing, patient symptoms and patient outcomes to support testing?

- What time of the day is it best to do the urine collection?
- How do different supplements affect urinary neurotransmitter values?

Urinary measurements reflect whole-body neurotransmitter production

Following are my own opinions regarding some of these issues. I choose to start with the misconception that urinary neurotransmitter testing examines brain levels of neurotransmitters only. I have never witnessed any reputable lab claim this. This claim only comes from misguided clinicians and patients. Urinary neurotransmitters are reflective of the entire physical system. With the many sources of neurotransmitter synthesis reviewed earlier, it is accepted that urinary measurements are reflective of total body neurotransmitter activity. Additionally, it has been observed that urinary neurotransmitter measurements are correlated with neurotransmitter activity in the central nervous system.

Clinical observations regarding neurotransmitter testing

Although there are studies supporting both sides of the argument of clinical correlation, I have found time and again, a strong clinical correlation between urinary neurotransmitter levels and patient symptoms such as depression, anxiety and insomnia. Urinary neurotransmitter testing *must* be used in conjunction with a detailed patient history and thorough physical examination at the time of testing. It is only upon alignment of patient history, exam and laboratory testing that an appropriate treatment plan can be recommended and integrated. Urinary neurotransmitter values alone are of limited significance. For example, if one wants to define the value of urinary norepinephrine and epinephrine to peripheral output from the adrenal medulla alone, this can still be of value to me as a clinician demonstrating hyper versus hypo adrenal neurotransmitter function. But these high/low values must be considered in the context of the patient's history of stress (physical, emotional, and/or cognitive). Only when all of the elements are used together can a clinician make appropriate recommendations to their patients. Science will continue to illuminate the biochemical associations between urinary neurotransmitter testing and central nervous system function, but the clinical associations between urinary neurotransmitter testing and patient's symptoms are promising and of benefit to many patients.

Scientific evidence supporting neurotransmitter testing

Neurotransmitters have been measured in academic settings for decades. The argument concerning whether

(Continued on next page)