



Order: 999999-9999



Client #: 12345

Doctor: Sample Doctor, MD
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174

Patient: Sample Report

Age: 54

Sex: Female

Body Mass Index (BMI): 26.4

Sample Collection Date/Time

Date Collected 08/06/2018

Wake Up Time 0557

Collection Time 0800

Collection Period 2nd morning void

Date Received 08/07/2018

Date Reported 08/08/2018

Analyte	Result	Unit per Creatinine	L	WRI	H	Reference Interval
Serotonin	55	µg/g				60 - 125
Dopamine	155	µg/g				125 - 250
Norepinephrine	14	µg/g				22 - 50
Epinephrine	8.5	µg/g				1.6 - 8.3
Norepinephrine / Epinephrine ratio	1.6					< 13
Glutamate	5.2	nmol/g				12.0 - 45.0
Gamma-aminobutyrate (GABA)	2.8	nmol/g				2.0 - 5.6
Glycine	640	nmol/g				450 - 2200
Histamine	68	µg/g				14 - 44
Phenethylamine (PEA)	80	nmol/g				32 - 84
Creatinine	125	mg/dL				30 - 225



Neurotransmitter Comments:

- Urinary neurotransmitter levels provide an overall assessment of the body's ability to make and break down neurotransmitters and are representative of whole body levels. They are required for neurotransmission throughout the body. Direct assessment of neurotransmitter levels and metabolism in the central nervous system is not clinically feasible and approximately twenty percent of the total urinary levels are derived from the brain. The enzymes, cofactors and precursors in neurotransmitter metabolism in general are the same in the periphery and in the central nervous system. Therefore, alterations in urinary neurotransmitter levels assessed in urine provide important clinical information, and may be associated with many symptoms including cognitive and mood concerns, diminished drive, fatigue and sleep difficulties, cravings, addictions and pain.
- Low serotonin may contribute to mood concerns including anxiety, OCD, depression, anger and a sense of discontentment. Low serotonin may also be associated with poor sleep quality and appetite changes, as well as chronic fatigue, rheumatoid arthritis, and over-all lassitude. Failure to regenerate tetrahydrobiopterin [BH4], an essential cofactor for serotonin synthesis, may decrease serotonin levels, and could be reflected in urine. BH4 regeneration may be supported by folates, vitamin B3, C, molybdenum and zinc. Additionally, production of serotonin requires vitamin D, iron and vitamin B6. Tryptophan is the essential precursor of serotonin. 5-HTP may increase serotonin, and L-theanine may affect serotonin function.
- Low norepinephrine may be associated with depression and mood changes as well as fatigue, difficulty concentrating, decreased ability to stay focused on tasks and diminished sense of personal/professional drive. Norepinephrine is converted from dopamine requiring vitamin C, copper and B3, and L-tyrosine is an amino acid precursor. L-theanine and Mucuna pruriens may modulate norepinephrine effects.
- Elevated epinephrine may be associated with stress response and contributory to anxiety, agitation, irritability, insomnia and hypertension. Epinephrine levels may be elevated in patients in association with exercise prior to the urine collection. Metabolism of epinephrine requires vitamins B2, B3, SAME, magnesium, and iron. L-theanine may modulate epinephrine effects.
- Low glutamate may be associated with depression, increased addictive tendencies including food seeking behaviors, and can contribute to mental fatigue and diminished mental stimulation. L-glutamine is a precursor amino acid.
- Elevated histamine may be associated with allergy-like symptoms, gastro-intestinal concerns, skin itch/inflammation (pruritis), increased wakefulness and insomnia, and has been demonstrated in gastrointestinal blastocystis infections. Levels may be elevated due to use of histamine-releasing medications, consumption of allergenic and sulfite-rich foods and/or histamine-rich foods, dysbiotic bacterial production in the intestine and zinc deficiency. High urine (and blood) histamine levels have been associated with cluster and cyclic headaches. Break down of histamine requires SAME and copper.
- Considerations to address the demonstrated imbalances beyond the identified co-factors and amino acid precursors may include dosage adjustments if indicated, as well as nervine and adaptogenic herbs, methylation support, vitamin D, and gastrointestinal health optimization.

Notes:
 Results are creatinine corrected to account for urine dilution variations. Creatinine is not meant to be used as an indicator of renal function.
 RI= Reference Interval, L (blue)= Low (below RI), WRI (green)= Within RI (optimal), WRI (yellow)= Within RI (not optimal), H (red)= High (above RI)
 Methodology: LCMS QQQ, Creatinine by Jaffe Reaction

