



Order: SAMPLE REPORT



Test: U123456-7890

Client #: 12345

Doctor: Sample Doctor

Doctor's Data, Inc.

3755 Illinois Ave.

St. Charles, IL 60174

Patient: Sample Patient

Age: 62

Sex: Female

Body Mass Index (BMI): 20.0

Sample Collection Date/Time

Date Collected 03/02/2022

Wake Up Time 07:30

Collection Period 1st morning void

Date Received 03/03/2022

Date Reported 03/04/2022

Analyte	Result	Unit per Creatinine	L	WRI	H	Reference Interval
Serotonin	63.6	µg/g				60 – 125
Dopamine	120	µg/g				125 – 250
Norepinephrine	16.6	µg/g				22 – 50
Epinephrine	1.5	µg/g				1.6 – 8.3
Norepinephrine / Epinephrine ratio	11.1					< 13
Glutamate	14	nmol/g				12.0 – 45.0
Gamma-aminobutyrate (GABA)	3.5	nmol/g				2.0 – 5.6
Glycine	694	nmol/g				450 – 2200
Histamine	14	µg/g				14 – 44
Phenethylamine (PEA)	107	nmol/g				32 – 84
Creatinine	118	mg/dL				30 – 225



Neurotransmitter Comments:

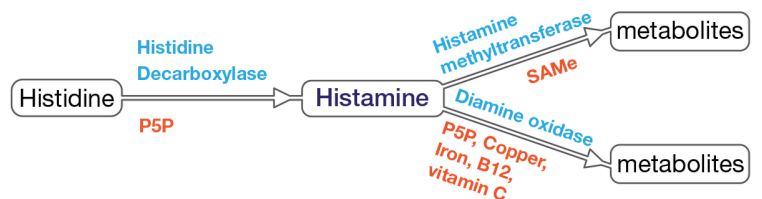
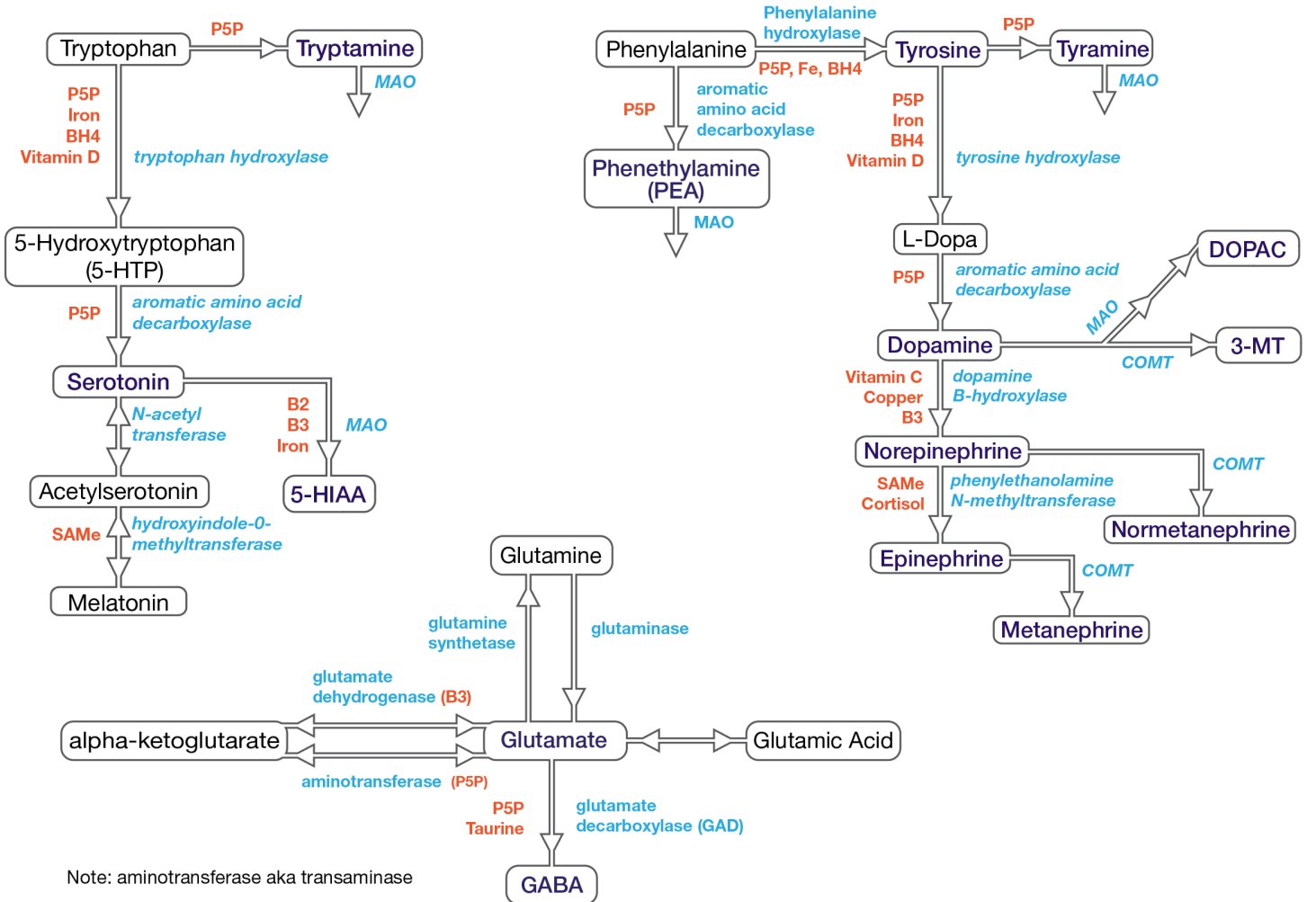
- Urinary neurotransmitter levels provide an overall assessment of the body's ability to make and break down neurotransmitters and are representative of whole body levels. Neurotransmitters are secreted all through the body, in neurons of both the central and peripheral nervous systems. The enzymes, 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 range serotonin may contribute to mood concerns including anxiety, OCD, depression, anger and a sense of discontentment. Low range 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 dopamine may be associated with anxiety/depression, difficulty concentrating, decreased libido and obesity, and may be associated with increased addiction and other stimulation seeking activities. Failure to regenerate tetrahydrobiopterin [BH4], an essential cofactor for dopamine synthesis, may decrease dopamine levels, and could be reflected in urine. BH4 regeneration may be supported by folates, vitamin B3, C, molybdenum and zinc. Additionally, production of dopamine requires vitamin D, iron and vitamin B6. L-tyrosine, L-theanine and Mucuna pruriens may influence dopamine signaling.
- Low norepinephrine and low epinephrine 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 niacin (B3). L-tyrosine, L-theanine and Mucuna pruriens influence this pathway.
- Upper range N/E ratio is consistent with poor conversion of norepinephrine to epinephrine. This conversion is driven by the phenylethanolamine N-methyltransferase (PNMT) enzyme that requires SAME, magnesium and cortisol (adequate HPA axis function) as cofactors. Suggest interpretation in context of cortisol levels/HPA axis function, with subsequent optimization of HPA axis function when clinically warranted.
- Elevated phenethylamine (PEA) may contribute to anxiety, with very high levels having amphetamine-like effects. Elevations in PEA may occur due to supplementation, use of monoamine oxidase inhibitors or antipsychotic medications, high protein diets, and production by protein-fermenting gut microbes. PEA and other trace amines are found in fermented foods (wine, cheese, chocolate, etc.). Elevated PEA levels may be associated with higher cortisol levels.
- Note: The reported low to low range monoamine neurotransmitters may be associated with genetic disruptions in methylation and/or suboptimal quantities of required co-factors. Further testing may be warranted.

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

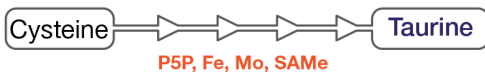
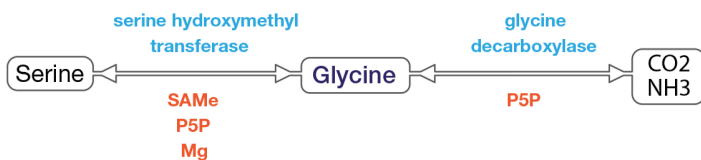
- Considerations to address the demonstrated imbalances beyond the identified co-factors and amino acid precursors may include dosage adjustments if indicated, as well as nervine and adaptogenic herbs, methylation support, vitamin D, and gastrointestinal health optimization.



# NT Neurotransmitter Pathways



"glycine cleavage system"



## KEY

**MAO** = monoamine oxidase

Cofactors for **MAO**: **B2, B3, P5P, Fe, Mg**

**COMT** = catechol-o-methyl-transferase

Cofactors for **COMT**: **SAmE, Mg**

**P5P** = (pyridoxal-5-phosphate) activated form of vitamin B6

**BH4** = (tetrahydrobiopterin)

Endogenous levels can be supported with SAmE, vitamin B3, C, Mo, Zn

**MTHF** = (methyltetrahydrofolate) active form of folate.

**SAmE** = endogenous levels can be supported with Mg, MTHF, and methylcobalamin supplementation.

Cofactors = ■

Enzymes = ■