

# Keys To Understanding ZRT's Neurotransmitter Report

If you're new to neurotransmitter testing, learning how to interpret a new type of report and deciding on patient treatment can be time consuming. So we've put together this summary to help you shorten the process.



## Explore Cases

Dr. Kate's Case Studies  
[zrtlab.com/nt-cases](http://zrtlab.com/nt-cases)

## How to Use the ZRT Report

### ► Step 1

Review whether patient results are high, within range or low in relation to both the range and the optimal range. The range is based on the 5th to 95th percentile and the optimal range is based on a 20th to 80th percentile. ZRT's report highlights highs (H) and lows (L) based on the overall range. The below example is from ZRT's 'Anxious Alisha' sample report.

Menses Status: Pre-Menopausal	Last Menses: Unspecified	BMI: 24.2
Gender: Female	DOB: 5/27/1984 (32 yrs)	Height: 5 ft 6 in
	Patient Ph#: Unspecified	Weight: 150 lb
		Waist: Unspecified

Test Name	Result	Range
<b>Inhibitory Neurotransmitters (µg/g Cr)</b>		
Serotonin (Urine)	32	L 47.6-140.3 (Optimal 61.0-103.2)
5-HIAA (Urine)	11800	2205-11816 (Optimal 2988-5850)
GABA (Urine)	142	L 167-463 (Optimal 193-367)
Glycine (Urine)	124	41-295 mg/g Cr (Optimal 61-159)
<b>Excitatory Neurotransmitters (µg/g Cr)</b>		
Glutamate (Urine)	5000	H 1213-4246 (Optimal 1515-2710)
Histamine (Urine)	23	3.6-44.3 (Optimal range 5.2-15.3)
PEA (Urine)	40	H 3.6-38.8 (Optimal 5.3-16.1)
Dopamine (Urine)	60	L 103-282 (Optimal 144-240)
DOPAC (Urine)	370	L 495-2456 (Optimal 658-1449)
HVA (Urine)	3000	L 3025-9654 (Optimal 3737-7048)
Norepinephrine (pooled) (Urine)	8	L 10.0-35.7 (Optimal 15.0-28.1)
Normetanephrine (Urine)	15	13.4-44.8 (Optimal 17.9-31.7)
Epinephrine (pooled) (Urine)	1	0.8-6.2 (Optimal 1.4-4.2)
Ratio: Norepi/Epi (Urine)	8	2.9-25.2
VMA (Urine)	2500	1996-5939 (Optimal 2580-4766)
<b>Urinary Creatinine (mg/mL)</b>		
Creatinine (pooled) (Urine)	1	0.3-2.0

<dL = Less than the detectable limit of the lab.  
 N/A = Not applicable; 1 or more values used in this calculation is less than the detectable limit.

**Therapies**  
 None



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## ► Step 2

Next, review the comments found on the last few pages of ZRT's report. They include general treatment considerations for each analyte tested and may include nutrients, cofactors, diets, and/or lifestyle therapies.

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Anxious Alishia

### Lab Comments

#### INHIBITORY NEUROTRANSMITTERS

##### SEROTONIN AND 5-HIAA

Serotonin is lower than the optimal range, whereas 5-hydroxyindoleacetic acid (5-HIAA) is higher than the optimal range. This indicates that monoamine oxidase (MAO) activity may be high. Increased MAO activity has been reported in patients with mood disorders, such as depression, anxiety and sleep disturbances which are also symptoms of low serotonin and some were self-reported by the patient (Zeb, et. al. 2017; (Aleksovski, et. al. 2017; Audhya, et. al. 2012). MAO is modulated by estrogens (which slow down MAO) and cortisol (which speed up MAO), so when if estrogen is low and/or cortisol is high, MAO activity increases, accelerating conversion of serotonin to its inert metabolite 5-HIAA.

**THERAPEUTIC CONSIDERATIONS:** When serotonin is low, testing for estrogen and cortisol is worth considering. In addition, supplementation with cofactors to promote serotonin biosynthesis (e.g. vitamin B6) and precursors (such as 5-HTP) to help raise serotonin are often helpful. L-theanine, and probiotics may be beneficial (Patterson et al., 2014; Pamela Wartian Smith, 2008; Strasser et al., 2016). Botanical MAO inhibitors may also be helpful in slowing down MAO activity, these include but are not limited to curcumin and passionflower. Additionally, lifestyle modifications, such as regular exposure to bright light, healthy diet, sufficient exercise, and positive self-talk are all effective strategies that result in increased serotonin levels (Young, 2007). If dysbiosis is suspect, introducing digestive support may be beneficial.

**Result explanation based on therapies & symptoms**

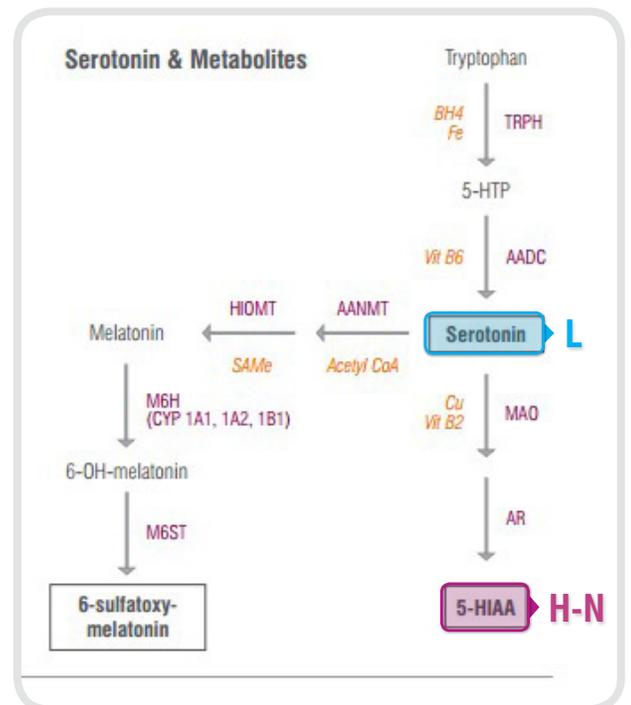
**Therapeutic Considerations**

## ► Step 3

Next, turn to the neurotransmitter cascade, which can be found after the results in our report. This provides a visual overview of how neurotransmitters are made and how they are metabolized, including cofactors that must be present to regulate each step. This visual is useful for viewing the relationships between neurotransmitters.

Many of our providers find their patients have a deeper understanding of the relationships between the neurotransmitters by transferring the high/low results from page 1 of the results onto the diagram of the neurotransmitter cascade. Using the cascade and the comments together should provide clear guidance on the appropriate next steps of treatment.

In the case of ZRT's 'Anxious Alisha,' sample report results show that Serotonin is low while 5-HIAA is high-normal, indicating that monoamine oxidase (MAO) activity may be high.





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## ► Step 4

Repeat this process with the remaining results for GABA, Glycine and Histamine, as well as PEA, dopamine and the other neurotransmitters.



### IMPORTANT REMINDER

If levels are unusually high, ask your patient about the following foods, supplements and medications – exposure to them may affect neurotransmitter levels.

Supplements	Medications	Food
5-HTP Quercetin Bioflavonoids Mucuna Phenibut Amino Acid Precursors	MAOIs SSRI/SNRIs Amphetamines Benzodiazepines	Walnuts Pineapple Kiwi Bananas

## Educational Resources

ZRT has a page of resources dedicated to interpreting neurotransmitters reports that can be found at: [zrtlab.com/nt-cases](http://zrtlab.com/nt-cases).

Additionally, the ZRT Resource Library – [zrtlab.com/resources](http://zrtlab.com/resources) – offers a wealth of educational options suitable for practitioners of all experience levels. These resources are all freely available for viewing or download 24x7x365.

Our recommendations include:

### Providers

#### Level 1

- ✓ **HANDOUT**  
Neurotransmitter Testing  
Patient Handout & Quiz
- ✓ **WEBINAR**  
Nuts & Bolts of  
Neurotransmitter  
Testing
- ✓ **BLOG**  
Getting the Most Out of  
Your Neurotransmitter Test

#### Level 2

- ✓ **WEBINAR**  
Case Review on the Importance  
of Testing Neurotransmitter  
Metabolites
- ✓ **BLOG**  
When to Test Neurotransmitters  
with Sex Hormones
- ✓ **BLOG**  
Collection Timing Matters  
for Urine Testers

### Patients

- ✓ **WEBINAR**  
Is the Neurotransmitter  
Test Right for You?
- ✓ **BLOG**  
Testing Neurotransmitters?  
Avoid the Big Five.
- ✓ **BROCHURE**  
Neurotransmitter Balance



For additional assistance, our clinical consultants are available Monday-Friday from 9am-5pm PT for calls with health care providers. No cost, no appointment necessary, no time limits.