LABTESTSDIRECT
Making Online Health Easy

Patient Name

SAMPLE

Patient Date of Birth

dd/mm/yyyy

Test Analysis

SAMPLE

Date Completed

Disclaimer

LABTESTSDIRECT
MAKING HEALTH ONLINE EASY

PATIENT FIRST NAME :

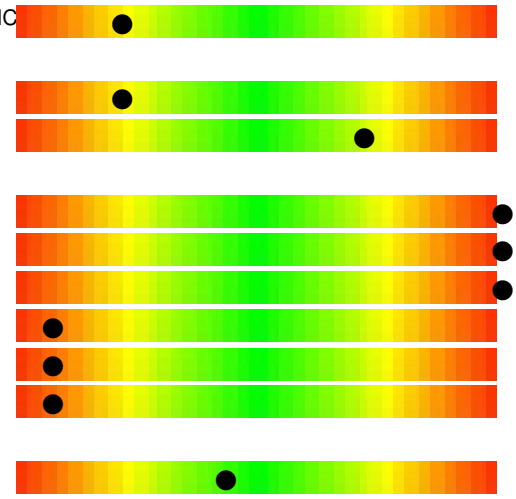
PATIENT SURNAME:

DATE OF BIRTH: GENDER:

ADDRESS:

INTEGRATIVE MEDICINE

URINE, SPOT	Result	Range	Units
Intermediate Neurotransmitter Profile			
Glycine, Urine	*77.0* *L	91.0 - 246	mmol/molC
Inhibitory Neurotransmitters			
SEROTONIN Urine	*124.8* *L	137.7 - 215.8	ug/gCR
GABA, Urine	300.0	197.0 - 311.0	ug/gCR
Excitatory Neurotansmitters			
GLUTAMATE Urine	*3543.0* *H	1669.0 - 2651.	ug/gCR
Histamine, Urine	*82.0* *H	12.4 - 20.5	ug/gCR
PhenylEthylamine PEA	*30.4* *H	3.7 - 10.8	ug/gCR
DOPAMINE, Urine	*<14.0* *L	257.0 - 395.0	ug/gCR
NORADRENALIN (Nor-Epinephrine)	*2.4* *L	16.7 - 30.6	ug/gCR
ADRENALIN (Epinephrine)	*0.2* *L	2.3 - 5.4	ug/gCR
Adrenal Adaptation Index			
Noradrenalin/Adrenalin Ratio	12.0	2.9 - 25.2	RATIO



Optimal Ranges Table

Biomarker	Adult Optimal Range (>11 Yrs)	
Serotonin	100 - 215	ug/gCr
GABA	400 - 600	ug/gCr
Glycine	61 - 159	ug/gCr
Glutamate	2520 - 3700	ug/gCr
Histamine	5.2 - 15.3	ug/gCr
PEA	5.3 - 16.1	ug/gCr
DOPAMINE	200 - 330	ug/gCr
Noradrenaline	18.5 - 25.5	ug/gCr
Adrenaline	1.4 - 4.2	ug/gCr

There are multiple factors that play roles in neurotransmitter levels (Lifestyle, receptors, meds, supplements, diet, stress, etc).
The optimal reference ranges stated above have been determined/derived statistically from historical patient data.
Historically, these levels were achieved in the majority of patients as they experienced symptom relief or improvement.

(*) Result outside normal reference range (H) Result is above upper limit of reference rang (L) Result is below lower limit of reference range

CORRELATIONS TO QUESTIONNAIRE

The following section is designed to give you an analysis of neurotransmitter and adrenal hormone values and an observation of how they affect one another. This approach targets the underlying cause of chronic symptoms by addressing the root imbalance. In this section, we will observe trends in the lab values, correlating those with the symptoms that were marked by the patient in the questionnaire.

ADRENAL INFLUENCES

Although the patient chose to only test neurotransmitter levels, an adrenal panel is suggested should any of the following symptoms arise: allergies, symptoms of hypoglycemia (shakiness when a meal is skipped), decreased stamina, fatigue, insulin resistance (sugar cravings, fatigue, abdominal weight gain, poor sleep), decreased libido, stress, salt cravings, which are all related to low adrenal function.

INHIBITORY NEUROTRANSMITTERS

EXCITATORY NEUROTRANSMITTERS

Retesting is an important part of this process. NT levels need to be monitored. Retesting for this patient is recommended in 9 weeks.

Additional Recommendations

* It is recommended that all patients on a program to balance HPA axis function should also supplement with B complex, a multi-mineral and multi-vitamin as well as EPA/DHA.

Disclaimers

* These products are not intended to diagnose, treat, cure, or prevent any disease.
*The statements above are recommendations to the clinician. All final therapeutic decisions are the responsibility of the treating physician.
* Please call Nutripath on 1300 688 522 with your technical and clinical questions.

For further reading and references, please refer to Nutripath's Technical guide and Clinical guide.

Lab Comments

INHIBITORY NEUROTRANSMITTERS

SEROTONIN

Serotonin is lower than the reference range.
Serotonin has calming effects and contributes to the feelings of well-being. Serotonin elevates mood, decreases anxiety, appetite, and libido, improves sleep and memory, eases depression, and helps regulate body temperature. Most of serotonin in the human body is produced in the gastrointestinal tract, where it stimulates gut motility. Research shows that urinary serotonin levels are reduced in patients with depression (Nichkova et al., 2012). Clinically, low serotonin is associated with anxiety, depression, changes in appetite, cravings, excessive worry, heightened sensitivity to pain, hot flashes, hunger, low mood, migraine, obsessive compulsive disorder, panic disorder, sleep disturbances, and worsened PMS symptoms.

THERAPEUTIC CONSIDERATIONS:

When serotonin is low, supplementation with cofactors to promote biosynthesis (e.g.

vitamin B6), precursors (tryptophan/5-HTP), L-theanine, and probiotics may be helpful (Patterson et al., 2014;Pamela Wartian Smith, 2008;Strasser et al., 2016). 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).

GABA
GABA is within the reference range for children.
The brain's major inhibitory neurotransmitter GABA functions as the off switch in the brain. GABA is essential to limiting excitation so that input signals are balanced and not overdone. GABA prevents anxiety, improves mood, promotes sleep, lowers blood pressure, acts as a muscle relaxant, aids in formation and storage of fear memories, increases insulin secretion and decreases blood glucose levels.
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EXCITATORY NEUROTRANSMITTERS
GLUTAMATE
Glutamate is elevated.
The brain's major excitatory neurotransmitter glutamate (also known as glutamic acid) functions as the "on" switch in the brain. Glutamate regulates appetite, thinking (cognition), increases gut motility, optimizes learning, modulates memory, improves libido,
decreases sleep and contributes to oxidative stress. Chronic stress maintains high levels of glutamate in the brain which may lead to
excitotoxicity and even neuronal damage (Gold, 2015;Popoli et al., 2012). Research shows that urinary glutamate levels are high in patients with celiac disease (MARKO et al., 1960) and with hyperthyroidism (Belanger et al., 1972). Clinically, high glutamate is suspected in anxiety, autism, bipolar disorder, depression, and impulsivity, inability to focus (racing thoughts), obsessive compulsive disorder, panic attacks, sleep difficulties, and stroke.
THERAPEUTIC CONSIDERATIONS:
GABA, L-theanine, and taurine may be beneficial to counter glutamate actions. Vitamin E and N-Acetyl Cysteine (NAC) may be used to combat oxidative damage. Cofactor supplementation with vitamins B3 and B6, and magnesium and NAC may aid with glutamate metabolism.

HISTAMINE
Histamine is elevated.
Histamine plays a dual role in the body as a neurotransmitter and a modulator of the immune system that has anti-pain properties, plays a neuroprotective role in the brain, and contributes to optimal maintenance of cognition and memory. Histamine stimulates
wakefulness and decreases sleep, stimulates gastric acid production, increases metabolism, suppresses appetite, and prevents weight gain.
Histamine is a potent vasodilator and a pro-inflammatory agent. Research shows that urinary histamine is high in patients with burns (Johansson et al., 2012), flushing disorder (Myers et al., 1981), food allergies (Raithel et al., 2015), cystitis (el-Mansoury et al., 1994), polycythemia (Horakova et al., 1977), and pregnancy (Harrison et al., 1974). Clinically, high histamine levels are implicated in allergies, depression, headaches, migraines, OCD, schizophrenia, sensitivity to chemicals, and sleep difficulties.
THERAPEUTIC CONSIDERATIONS:

Therapeutic strategies to reduce histamine levels may involve antihistamines and a low histamine diet.
High histamine foods include but are not limited to beer, champagne, aged cheeses, eggplant, canned fish, fermented meat, red and white wine, sauerkraut, and spinach (Maintz and Novak, 2007). Additionally, flavonoids (green tea extract, quercetin, grape seed extract, gingko biloba, be citrus bioflavonoids, bilberry extract, hawthorn extract) may be beneficial to ease the symptoms of high histamine (Murray et al., 2005).

PEA
PEA is elevated.
PEA, also known as phenethylamine, promotes energy, elevates mood, and regulates attention. PEA also contributes to aggression, serves as a biomarker for ADHD, and prolongs the signaling of dopamine, norepinephrine, and serotonin. Urinary PEA levels increase after amphetamine use (Kusaga et al., 2002;Zametkin et al., 1984), exercise (Szabo et al., 2001), and in the following disorders: bipolar disorder (Karoum et al., 1982), phenylketonuria (Reynolds et al., 1978), schizophrenia (O'Reilly and Davis, 1994), postpartum period (Taylor et al., 1996), and in severe anxiety and insomnia (DeLisi et al., 1984). High PEA is suspected in the etiology of anxiety, inflammation, inability to focus (racing thoughts), sleep difficulties, and toxicity.
THERAPEUTIC CONSIDERATIONS:
Methylation cofactor support to aid metabolism may be beneficial.

DOPAMINE
Dopamine is lower than the reference range.
Dopamine improves attention, focus, and motivation, helps with decision making, modulates movement control, promotes lactation, increases blood pressure, urine output and sodium excretion, and allows for feelings of reward and pleasure. Additionally, the quest for dopamine stimulation plays a central role in the etiology of addiction. Dopamine also serves as the parent precursor to norepinephrine and epinephrine. Research shows that urinary dopamine levels are reduced in patients with Alzheimer's disease (Liu et al., 2011), anorexia nervosa (Van Binsbergen et al., 1991), anxiety with depression (Field et al., 2010), fibromyalgia (Riva et al., 2012), and periodic limb movement disorder (Cohrs et al., 2004). Clinically, low dopamine is implicated in addiction, apathy, cravings, depression, fatigue, impulse control issues, increased sensitivity to pain, low libido, low mood, memory issues, sleep disturbances, and weight control issues.
THERAPEUTIC CONSIDERATIONS:
Supplementation with precursors (tyrosine or L-DOPA) and/or cofactors (iron, vitamin B6, tetrahydrofolate) to promote biosynthesis may be beneficial.

NOREPINEPHRINE
Norepinephrine is lower than the reference range.
Norepinephrine functions both as a neurotransmitter and a hormone, participating in the body's fight or flight response. Norepinephrine increases alertness, focuses attention, fine-tunes vigilance, increases blood pressure, heart rate, and blood glucose, reduces digestive activity, pain and sleep, prevents bladder emptying, and regulates body temperature. The adrenal gland produces approximately 20% of norepinephrine with 80% produced by the sympathetic nerve fibers. Research shows that urinary norepinephrine is reduced in patients with Alzheimer's disease. Clinically, low

norepinephrine is implicated in anorexia, attention impairment, depression, fatigue, hypotension, lack of motivation, lethargy, low mood, memory issues, slow pulse rate, and weight issues.
THERAPEUTIC CONSIDERATIONS:
Precursor supplementation with tyrosine or phenylalanine, or cofactor support with ascorbic acid, iron, tetrahydrofolate, and vitamin B6 may be beneficial.

EPINEPHRINE
Epinephrine is lower than the reference range.
Epinephrine functions both as a neurotransmitter and a hormone, participating in the body's fight or flight response. Epinephrine increases alertness, focuses attention, fine-tunes vigilance, increases blood pressure, heart rate, and blood glucose, reduces digestive activity, pain and sleep, prevents bladder emptying, and regulates body temperature. Approximately 80% of peripheral catecholamine output by the adrenal glands accounts for epinephrine. Research shows that urine epinephrine is decreased in Alzheimer's disease (Liu et al., 2011), metabolic syndrome (Landsberg et al., 1991), and obesity (Landsberg et al., 1991). Clinically, low
epinephrine is implicated in attention impairment, chronic stress, depression, dizziness, chronic fatigue, hypotension, low mood and libido, and memory issues.
THERAPEUTIC CONSIDERATIONS:
Adrenal support may be beneficial to increase epinephrine levels.

Creatinine, Urine Spot.	**11.3**	8.0 - 19.0	mmol/L	

Tests ordered: INEUM
(*) Result outside normal reference range (H) Result is above upper limit of reference rang (L) Result is below lower limit of reference range