Neuro Basic Profile; urine

Order: HOR12 Sample Report
Client #: 38596
Regenerus Laboratories Ltd
Aero 14 Redhill Aerodrome Kings Mill Lane
Redhill, Surrey, RH1 5YP
United Kingdom

HOR12 Sample Report
Age: 59 **DOB:** 02/29/1960
Sex: Female
Body Mass Index (BMI): 19

Sample Collection	Date/Time
Date Collected	04/10/2019
Wake Up Time	06:30
Collection Period	1st morning void
Date Received	04/16/2019
Date Completed	04/19/2019

Analyte	Result	Unit per Creatinine	L	WRI	H	Reference Interval
Serotonin	77.0	µg/g				60 – 125
Dopamine	172	µg/g				125 – 250
Norepinephrine	20.7	µg/g				22 – 50
Epinephrine	1.2	µg/g				1.6 – 8.3
Norepinephrine / Epinephrine ratio	17.3					< 13
Glutamate	29	µmol/g				12.0 – 45.0
Gamma-aminobutyrate (GABA)	5.2	µmol/g				2.0 – 5.6
Glycine	1943	µmol/g				450 – 2200
Histamine	53	µg/g				14 – 44
Phenethylamine (PEA)	103	nmol/g				32 – 84
Creatinine	91.0	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 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.
- Elevated 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.
- Upper range GABA may contribute to difficulty concentrating, diminished memory, dampened mood and decreased cognitive processing as well as fatigue, decreased exercise endurance, sleepiness and an inability to feel alert. L-theanine may modulate the effects of GABA.Upper range levels of GABA may be associated with bacterial overgrowth (i.e. urinary tract infection or gastrointestinal dysbiosis).
- 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.
- 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.
- 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

Adrenal Hormone Report; saliva

Order: HOR12 Sample Report
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Regenerus Laboratories Ltd
Aero 14, Redhill Aerodome, Kings Mill Ln
Redhill Surrey, RH1 5YP
United Kingdom

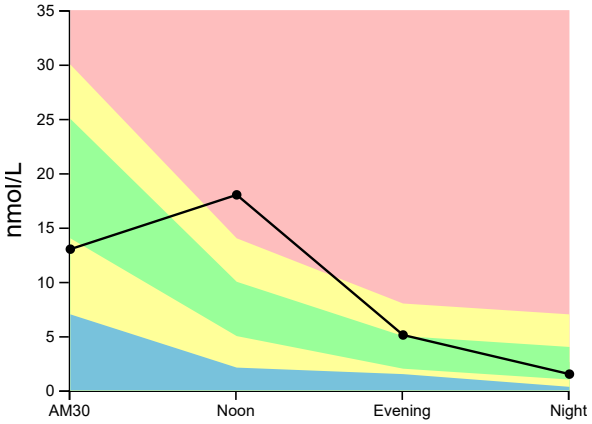
HOR12 Sample Report
Age: 59 **DOB:** 02/29/1960
Sex: Female
Body Mass Index (BMI): 19.1

Menopausal Status: Post-menopausal

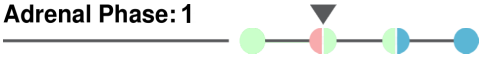
Sample Collection	Date/Time
Date Collected	04/10/2019
AM30	04/10/2019 07:00
Noon	04/10/2019 10:45
Evening	04/10/2019 18:05
Night	04/10/2019 22:10
Date Received	04/16/2019
Date Completed	04/19/2019

Analyte	Result	Unit	L	WRI	H	Optimal Range	Reference Interval
Cortisol AM30	13	nmol/L		◆		14.0 – 25.0	7.0 – 30.0
Cortisol Noon	18	nmol/L			↑	5.0 – 10.0	2.1 – 14.0
Cortisol Evening	5.1	nmol/L		◆		2.0 – 5.0	1.5 – 8.0
Cortisol Night	1.5	nmol/L		◆		1.0 – 4.0	0.33 – 7.0
DHEA*	140	pg/mL		◆			106 – 300

Cortisol Graph



Adrenal Phase: 1



Hormone Comments:

- The elevated cortisol level(s) and diurnal pattern are consistent with hypothalamic pituitary axis (HPA) dysregulation (Phase 1), although cortisol or glucocorticoid derivative supplementation cannot be excluded. Query use of steroidal inhalers or topical creams.

Notes:
RI= Reference Interval, L (blue)= Low (below RI), WRI (green)= Within RI (optimal), WRI (yellow)= Within RI (not optimal), H (red)= High (above RI)
The current samples are routinely held three weeks from receipt for additional testing.

*This test was developed and its performance characteristics determined by Doctor's Data, Inc. The FDA has not approved or cleared this test; however, FDA clearance or approval is not currently required for clinical use. The results are not intended to be used as the sole means for clinical diagnosis or patient management decisions.

Methodology: Enzyme Immunoassay

Hormone Report; saliva

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HOR12 Sample Report
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Sex: Female
Body Mass Index (BMI): 19.1

Menopausal Status: Post-menopausal

Hormone Supplements:
Estradiol,Estriol,Progesterone

Sample Collection	Date/Time
Date Collected	04/10/2019
AM30	04/10/2019 07:00
Noon	04/10/2019 10:45
Evening	04/10/2019 18:05
Night	04/10/2019 22:10
Date Received	04/16/2019
Date Completed	04/19/2019

Analyte	Result	Unit	L	WRI	H	Reference Interval	Supplementation Range**
Estrone (E1)*	17.1	pg/mL		◆		< 47	
Estradiol (E2)	2.1	pg/mL		◆		0.5 – 3.2	1.5 – 7.2
Estriol (E3)*	302	pg/mL		◆		< 66	67 – 708
EQ (E3 / (E1 + E2)) Ratio	16			◆		≥ 1.0	
Progesterone (Pg)	152	pg/mL	↓			18 – 126	500 – 3000
Pg/E2 Ratio	72.4		↓			200 – 600	
Testosterone	14	pg/mL		◆		6.0 – 49	30 – 60
DHEA*	140	pg/mL		◆		106 – 300	

Hormone Comments:

- The estradiol level is most reflective of the nadir of current transdermal patch and symptoms. Dosage adjustment may be a consideration should symptoms persist. The recommended testing interval for transdermal patches is mid cycle of the dosage interval. The patient reports sample collection on day 3 of a 3 day regimen.
- The ideal dosage interval between last topical hormone application and initial salivary sample collection is between 12 and 24 hours. Patient reports estriol and progesterone interval as greater than 60 hours. Therefore, the level(s) cannot be accurately commented on.

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The Pg/E2 ratio is an optimal range established based on clinical observation. Progesterone supplementation is generally required to achieve this level in men and postmenopausal women.

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**If supplementation is reported then the supplementation ranges will be graphed. The supplementation ranges depicted are for informational purposes only and were derived from a cohort of adult men and women utilizing physiologic transdermal bioidentical hormone therapy.

Methodology: Enzyme Immunoassay