

FEM :24-Hr Comp Urine Profile + Metabolites

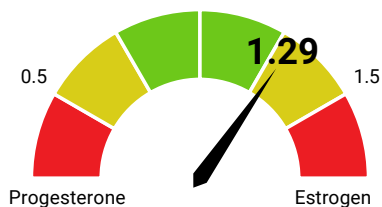
Patient Information	Clinician/Order Information	Sample Information
2021 Test Female 4 DOB: 1/26/1991 Age: 32 Gender: Female Phone: +18773168686 Patient ID: affbb3fd Height: N/A Weight: N/A	Tamara Densmore Lab Inc +8773168686 Order date: 2/16/2023	Accession# S-0223-0001827 Collected: 2/7/2023 Received: 2/16/2023 Reported: 2/16/2023 11:02:27 AM <u>Collection time:</u> 1st 2nd 3rd 4th 5th 10:37 AM 2:38 PM 4:38 PM 8:38 PM 6:35 AM

1st Day of Last Menses	Days Between Periods	Menstrual Cycles	Hysterectomy	When?	Ovaries Removed	When?	Pregnant?
N/A	N/A	N/A	N/A		N/A		N/A

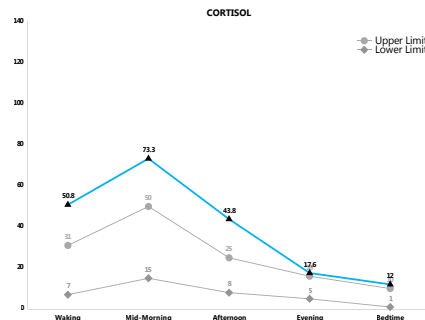
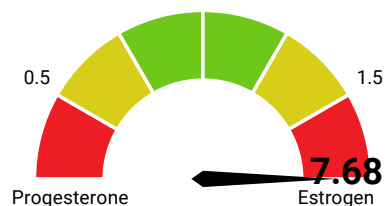
Category	Type	Delivery	Duration of Use
Hormone			

Analyte	Unit	Observation	Results	Reference Range
Alpha-Pregnanediol	ng/mg CR		212.0	26 - 338
Alpha-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	212.0	257 - 2389
Beta-Pregnanediol	ng/mg CR		1013.36	201 - 1669
Beta-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	1013.36	1600 - 12474
Total Estrogen Load	ng/mg CR		116.55	30 - 130
Estrone	ng/mg CR		5.77	1.7 - 8.5
Estradiol	ng/mg CR		2.85	0.8 - 3.3
Estriol	ng/mg CR		3.6	2.8 - 11.2
2-Hydroxyestrone	ng/mg CR	High	18.8	2 - 8.4
16a-Hydroxyestrone	ng/mg CR	High	4.73	<=1.43
4-Hydroxyestrone	ng/mg CR	High	19.54	<=1.2
Testosterone	ng/mg CR	High	16.76	2.3 - 7.8
Dihydrotestosterone	ng/mg CR	High	9.04	<=3.2
Average DHEA-S	ng/mg CR	Low	34.94	38 - 507
Free DHEA	ng/mg CR		8.61	6.1 - 17.3
Anabolic/Catabolic Ratio	Ratio		1.28	0.5 - 1.5

Total Estrogen/Progesterone Ratio



Total Estrogen/Progesterone Ratio (w/ Oral Pg)



Progesterone Markers

	Units	Observation	Target Ranges
Alpha-Pregnanediol	ng/mg CR		26 212.0 338
Beta-Pregnanediol	ng/mg CR		201 1013.36 1669
Alpha-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	257 212.0 2389
Beta-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	1600 1013.36 12474

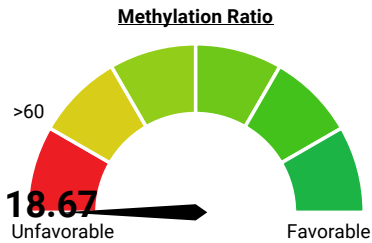
Estrogen Markers

	Units	Observation	Target Ranges
Total Estrogen Load	ng/mg CR		30 116.55 130
Estrone (E1)	ng/mg CR		1.7 5.77 8.5
Estradiol (E2)	ng/mg CR		0.8 2.85 3.3
Estriol (E3)	ng/mg CR		2.8 3.6 11.2



Estrogen Metabolism Markers

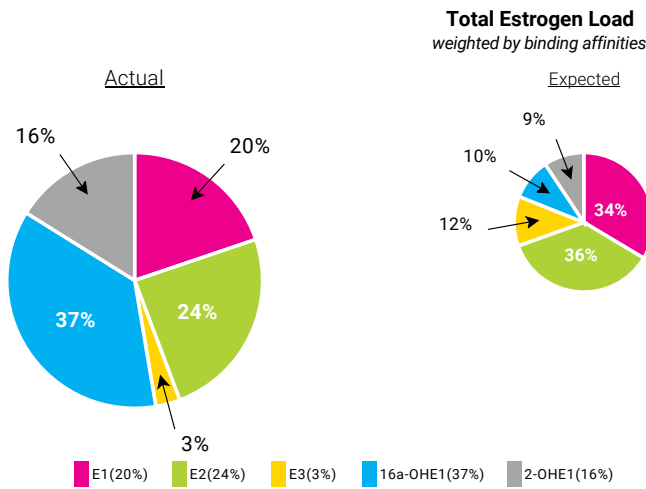
	Units	Observation	Target Ranges
2-Hydroxyestrone (2-OHE1)	ng/mg CR	High	2 8.4 18.8
16a-Hydroxyestrone (16a-OHE1)	ng/mg CR	High	< 1.43 4.73
4-Hydroxyestrone (4-OHE1)	ng/mg CR	High	< 1.2 19.54
2-Methoxyestrone (2-oMeE1)	ng/mg CR		3.1 3.51 15.8



The methylation ratio is low indicating methylation support is needed. When 2-OHE1 is very low (under 0.9), this ratio has limited interpretive value and can be ignored. Low methylation can be caused by low levels of donor methyl groups or genetic mutations in the COMT, MTHFR and other methylation markers. Phase II support, including methyl-donor supplements and dietary considerations (paleo-like), can increase methylation. If the patient is taking methyl donor supplements, make certain B-vitamins are included, when increasing methylation, to help eliminate excess methyl groups and prevent methyl trapping (most often seen in patients with compromised COMT activity).

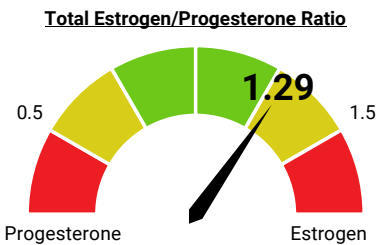


Total Estrogen Load

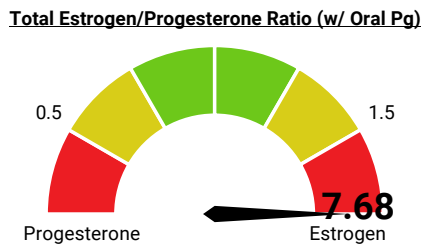


This patient has a normal Total Estrogen Load, with elevated 16a-OHE1. The Total Estrogen Load considers the binding affinity of each estrogen analyte at the receptor. Due to the high estrogenic strength of 16a-OHE1, the total estrogen levels may be high than expected (even when E1, E2 and E3 are normal/low levels). Improving Phase I metabolism, will likely lower the Total Estrogen Load value as the 16a-OHE1 improves/decreases. To examine the balance between total estrogen components, compare the "actual" chart on the left to the "expected" chart on the right, representing the pathways of estrogen metabolism and their relative ratio to one another. Then, examine the Progesterone: Estrogen ratio to determine the balance between estrogen and progesterone for the best clinical outcomes.

Estrogen/Progesterone Ratio



Only review this ratio when the patient is NOT taking oral progesterone. Estrogen and progesterone are in balance. Patients with a value of 1 are optimally balanced, >1 are balanced with a slight increase in estrogen and <1 are balanced with a slight increase in Progesterone. Maintaining balance between Progesterone and Estrogen produces optimal clinical outcomes in most patients. Patients at the high or low ends of normal (yellow zones) are approaching an imbalance which, can be improved by increasing/decreasing either estrogen or progesterone relative to one another.

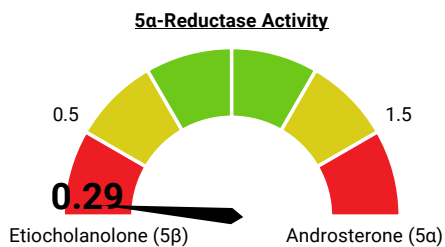
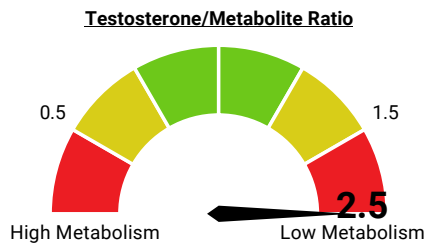


Only review this ratio when the patient IS taking oral progesterone. This patient has either too much estrogen or too little opposing progesterone. Achieving balance between estrogen and progesterone (ratio nearest 1) produces optimal clinical outcomes.



Androgen Markers

	Units	Observation	Target Ranges
Testosterone	ng/mg CR	High	2.3 7.8 16.76
Dihydrotestosterone (5a-DHT)	ng/mg CR	High	< 3.2 9.04
Testosterone Metabolites	ng/mg CR		21.9 60.95 70.1
Average DHEA-S	ng/mg CR	Low	38 34.94 507
Free DHEA	ng/mg CR		6.1 8.61 17.3
Etiocholanolone	ng/mg CR	Low	120 95.31 421
Androsterone	ng/mg CR	Low	147 38.43 593

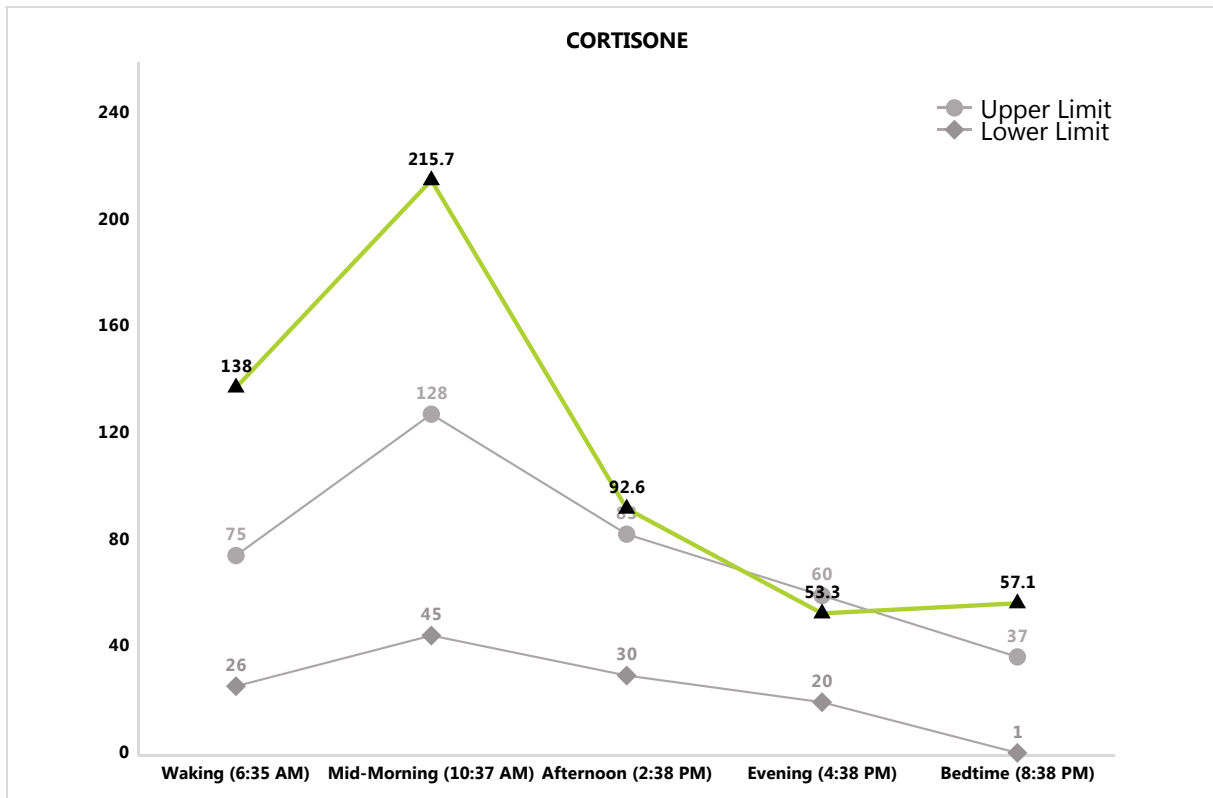
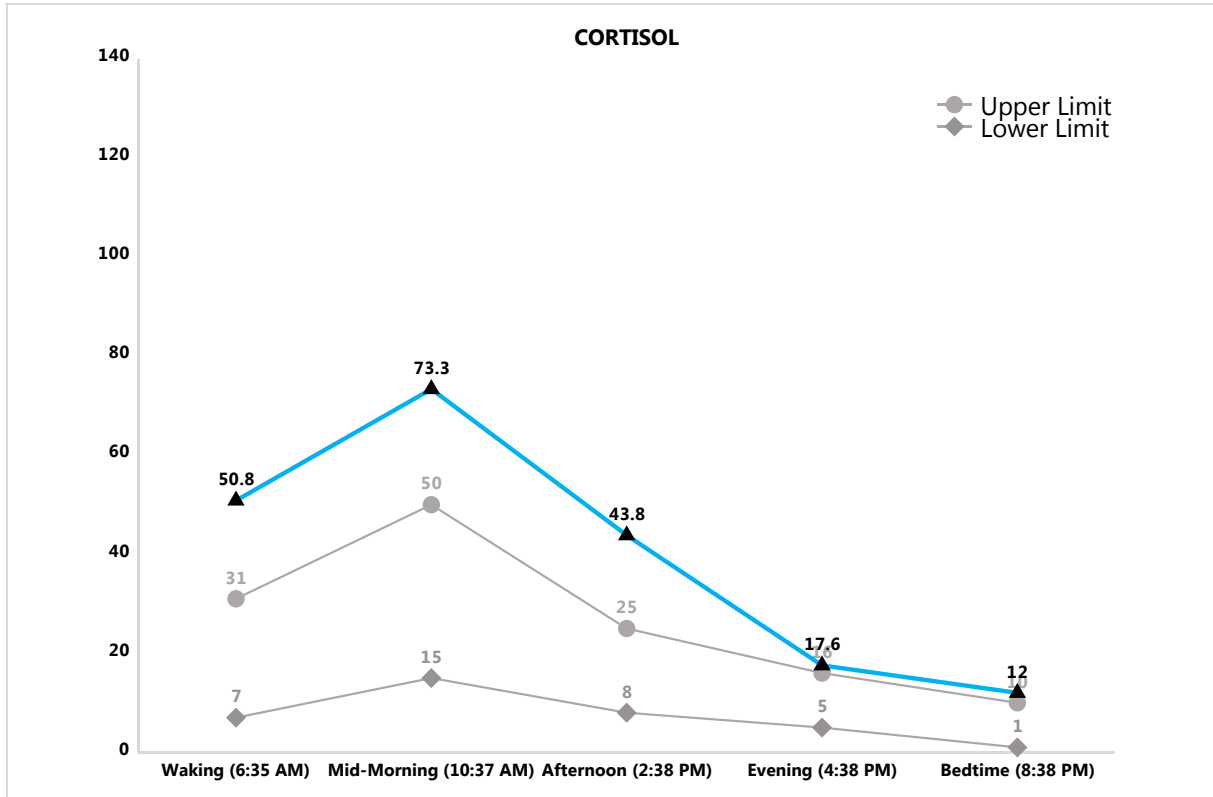


The levels of testosterone metabolites are lower than expected in relative ratio to testosterone and 5-alpha-reductase (5aR) activity is low. Some patients may experience lower androgen effect than expected for their testosterone levels because the testosterone may be "pooling" as a result of decreased metabolism. When metabolites are lower than expected with decreased 5aR activity, it can indicate increased aromatase activity resulting in increased estrogens as well. If estrogen levels are higher than expected, consider lowering aromatase activity through increased zinc, celery, Resveratrol, cruciferous vegetables or other aromatase inhibitors. DHEA supplementation can increase 5aR activity to increase downstream metabolism and decrease aromatase activity as well.

5-alpha-reductase (5aR) activity appears low but may not be clinically relevant if other 5a levels are higher than 5b levels. Confirm this value by comparing 5a-pregnanediol to 5b-pregnanediol, testosterone to 5a-DHT, and cortisol to a-THFs in this report. Low 5aR activity can be an indicator of backdoor metabolism of androgens, higher levels of aromatase activity, lower 5a-Pregnanediol or lower levels of the downstream metabolites of testosterone and cortisol. Patients who have lower 5aR activity (5aR ratio <= 0.5) may need a higher dose of testosterone during therapy, if testosterone metabolites are also low. Optimal balance exists when the ratio is nearest 1 (center).



HPA-Axis Graphs



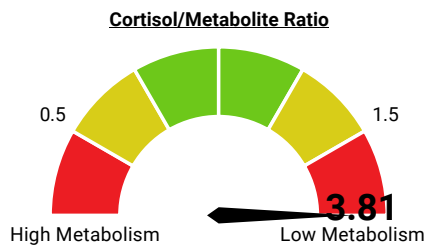
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HPA-Axis Markers

	Units	Observation	Target Ranges
24-hour Cortisol	ng/mg 24hr CR	Low	19 - 38 17.46
24-hour Cortisone	ng/mg 24hr CR	Low	39 - 74 14.04
Cortisol Metabolites	ng/mg CR	Low	1160 - 2183 244.5
Total 17-Hydroxysteroids	ng/mg CR	Low	1492 - 2637 416.06
Free DHEA	ng/mg CR		6.1 - 17.3 8.61
Total 17-Ketosteroids	ng/mg CR	Low	730 - 1522 290.66

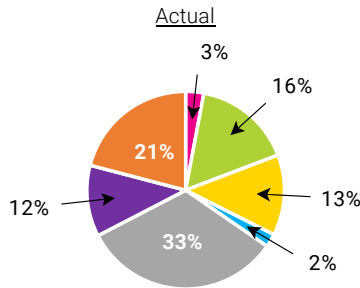


The Cortisol:Metabolite Ratio is elevated and cortisol metabolites are low. This indicates that metabolism of cortisol is decreased; resulting in a pooling effect of free-cortisol levels that can make free-cortisol appear higher than actual adrenal output (see the cortisol curve to assess adrenal function). Decreased metabolism of cortisol is often caused by hypothyroidism and certain inflammatory responses. Certain 17-Hydroxysteroids are also cortisol metabolites, and as such, should be in balance with 17-Ketosteroids for optimal function (see Anabolic/Catabolic ratio)

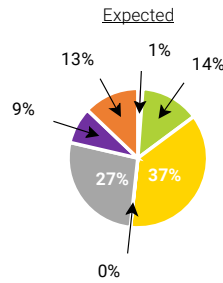


HPA-Axis Markers Continued

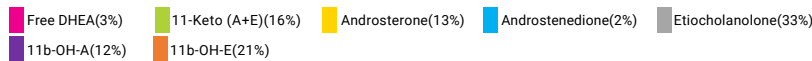
Total 17-Ketosteroids



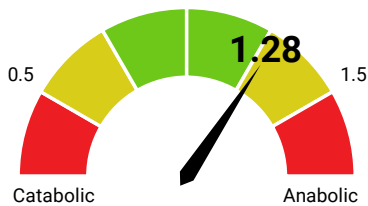
Anabolic



This patient's 17-ketosteroids are low. Decreases in 17-ketosteroids can be the result of low DHEA levels, hyperthyroidism, depressed adrenal function, kidney issues, hypopituitarism or decreased testicular function. 17-ketosteroids are formed during metabolism of androgenic sex hormones (specifically DHEA) and are released by the adrenal glands (M/F) and the testes (M). To examine the balance between the 17-ketosteroids, compare the "actual" chart on the left to the "expected" chart on the right representing the relative ratios of each. 17-ketosteroids should also be in balance with 17-hydroxysteroids to achieve optimal clinical results (see anabolic/catabolic ratio).



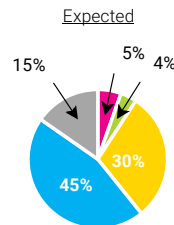
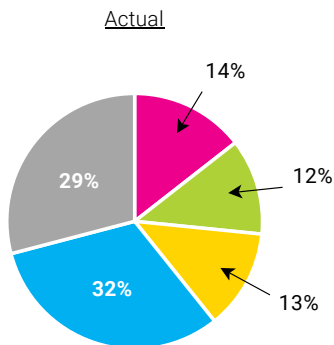
Anabolic/Catabolic Ratio



This patient is balanced between anabolic steroids and catabolic steroids, creating a bio-environment for cell proliferation and tissue health to perform at optimal levels while still allowing for detoxification and responses to stress. The optimal ratio is 1 (center). When results near the low end (more catabolic - left yellow zone) or the high end (more anabolic - right yellow zone) of the normal range, the anabolic/catabolic ratio is approaching an imbalance.

Total 17-Hydroxysteroids

Catabolic



The results shown indicate low catabolic (17-hydroxysteroid) metabolites. This can be due to low cortisol, low cortisol metabolism or both. Other possible causes include androgen therapy, high DHEA levels, hypothyroidism, imbalances of sex hormones and other adrenal issues. The balance between anabolic and catabolic metabolites is important and can be assessed in the anabolic/catabolic ratio.



Patient Result History

Analyte	Unit	2/15/2023 (S-0223-0001822)			2/16/2023 (S-0223-0001827)		
		Observation	Results	Reference Range	Observation	Results	Reference Range
Creatinine	mg/dL		100.0	30 - 300		100.0	30 - 300
Estrogen and Progesterone Markers							
Alpha-Pregnanediol	ng/mg CR		242.25	26 - 338		212.0	26 - 338
Alpha-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	242.25	257 - 2389	Low	212.0	257 - 2389
Beta-Pregnanediol	ng/mg CR		1460.1	201 - 1669		1013.36	201 - 1669
Beta-Pregnanediol (w/ Oral Pg)	ng/mg CR	Low	1460.1	1600 - 12474	Low	1013.36	1600 - 12474
Alpha-Pregnanediol / Beta-Pregnanediol Ratio	Ratio		0.77	0.5 - 1.5		0.97	0.5 - 1.5
Total Estrogen Load	ng/mg CR	High	228.67	30 - 130		116.55	30 - 130
Estrone	ng/mg CR	High	11.58	1.7 - 8.5		5.77	1.7 - 8.5
Estradiol	ng/mg CR	High	5.5	0.8 - 3.3		2.85	0.8 - 3.3
Estriol	ng/mg CR		7.32	2.8 - 11.2		3.6	2.8 - 11.2
2-Hydroxysterone	ng/mg CR	High	37.5	2 - 8.4	High	18.8	2 - 8.4
16a-Hydroxysterone	ng/mg CR	High	9.17	<=1.43	High	4.73	<=1.43
4-Hydroxysterone	ng/mg CR	High	43.55	<=1.2	High	19.54	<=1.2
E Quotient	Ratio	Low	0.43	>=1	Low	0.42	>=1
2-Methoxyestrone	ng/mg CR		7.44	3.1 - 15.8		3.51	3.1 - 15.8
2:16 Ratio (2-OHE1/16α-OHE1)	Ratio		4.09	>=4	Low	3.97	>=4
Methylation Ratio	Ratio	Low	19.84	>=60	Low	18.67	>=60
Total Estrogen/Progesterone Ratio	Ratio	-				1.29	0.5 - 1.5
Total Estrogen/Progesterone Ratio (w/ Oral Pg)	Ratio	-			High	7.68	0.5 - 1.5
Androgen Markers							
Testosterone	ng/mg CR	High	33.24	2.3 - 7.8	High	16.76	2.3 - 7.8
Dihydrotestosterone	ng/mg CR	High	17.76	<=3.2	High	9.04	<=3.2
Testosterone Metabolites	ng/mg CR	High	111.09	21.9 - 70.1		60.95	21.9 - 70.1
Testosterone/Metabolite Ratio	Ratio	High	2.73	0.5 - 1.5	High	2.5	0.5 - 1.5
Androsterone	ng/mg CR	Low	75.64	147 - 593	Low	38.43	147 - 593
Etiocholanolone	ng/mg CR		186.08	120 - 421	Low	95.31	120 - 421
5-alpha-Androstanediol	ng/mg CR	High	52.95	2.8 - 14.2	High	27.49	2.8 - 14.2
5-beta-Androstanediol	ng/mg CR		40.38	14 - 54		24.42	14 - 54
Free DHEA	ng/mg CR		16.74	6.1 - 17.3		8.61	6.1 - 17.3
Average DHEA-S	ng/mg CR		124.2	38 - 507	Low	34.94	38 - 507
DHEA Total	ng/mg CR	Low	290.5	649 - 1315	Low	183.59	649 - 1315
5α-Reductase Activity	Ratio	Low	0.3	0.5 - 1.5	Low	0.29	0.5 - 1.5
Androstenedione	ng/mg CR	High	12.04	0 - 1.2	High	6.3	0 - 1.2
HPA - Axis Markers							
Waking Cortisol	ng/mg CR		29.44	7 - 31	High	50.84	7 - 31
Mid-morning Cortisol	ng/mg CR	-			High	73.34	15 - 50
Afternoon Cortisol	ng/mg CR	-			High	43.83	8 - 25
Evening Cortisol	ng/mg CR	-			High	17.56	5 - 16
Bedtime Cortisol	ng/mg CR	-			High	12.01	1 - 10
Waking Cortisone	ng/mg CR		61.55	26 - 75	High	138.0	26 - 75
Mid-morning Cortisone	ng/mg CR	-			High	215.73	45 - 128
Afternoon Cortisone	ng/mg CR	-			High	92.58	30 - 83
Evening Cortisone	ng/mg CR	-				53.3	20 - 60
Bedtime Cortisone	ng/mg CR	-			High	57.09	1 - 37
24-hour Cortisol	ng/mg 24hr CR	-			Low	17.46	19 - 38
24-hour Cortisone	ng/mg 24hr CR	-			Low	14.04	39 - 74
Pregnanetriol	ng/mg CR	-			Low	120.99	170 - 423
Allo-Tetrahydrocortisol	ng/mg CR	-				60.11	53 - 155
Tetrahydrodeoxycortisol	ng/mg CR	-				50.57	46 - 106
Tetrahydrocortisone	ng/mg CR	-			Low	131.76	564 - 1194
Tetrahydrocortisol	ng/mg CR	-			Low	52.63	369 - 795
11-Keto (Androsterone + Etiocholanolone)	ng/mg CR	-			Low	47.23	62 - 213
11b-Hydroxyandrosterone	ng/mg CR	-			Low	33.96	36 - 134
11b-Hydroxyetiocholanolone	ng/mg CR	-				60.82	57 - 202
Cortisol Metabolites	ng/mg CR	-			Low	244.5	1160 - 2183
Cortisol: Metabolite Ratio	Ratio	-			High	3.81	0.5 - 1.5

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Analyte	Unit	2/15/2023 (S-0223-0001822)			2/16/2023 (S-0223-0001827)		
		Observation	Results	Reference Range	Observation	Results	Reference Range
Total 17-Ketosteroids	ng/mg CR	-			Low	290.66	730 - 1522
Total 17-Hydroxysteroids	ng/mg CR	-			Low	416.06	1492 - 2637
Anabolic/Catabolic Ratio	Ratio	-				1.28	0.5 - 1.5
Cortisol/Cortione 11B-HSD II	Ratio	-			High	2.45	0.4 - 1.2

