NUTRIPATH · PATIENT REPORT
16 Harker St, Burwood VIC, 3125 • info@nutripath.com.au • 1300 688 522

NATA Accreditation: #20770

25150-0002

*** NutriPATH Pathology** NutriPath. 16 Harker Street, Burwood VIC 3125

Order ID 6661241
Lab ID 4106538
Patient ID P001092
Ext ID 25150-0002

LILY WILLIAMS

Sex: Female • 26yrs • 08-Feb-99
28 GEORGE STREET, BOWEN QLD 4805

RECEIVED
30-May-25

Clinical Notes: 5-HTP

EndoMAP

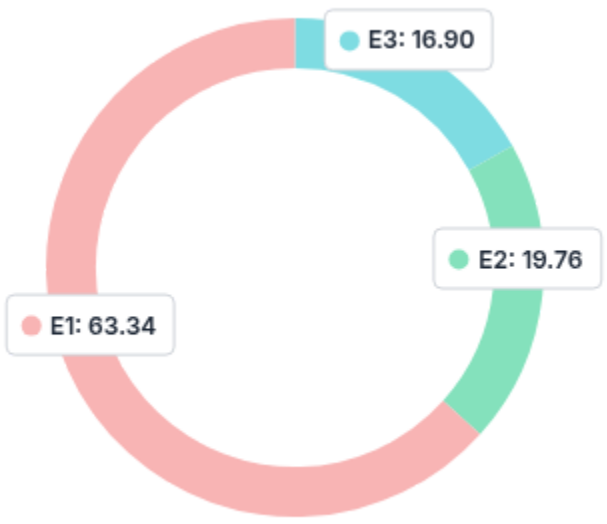
Specimen type - Urine, Dried

Collected
21-May-25 06.02am, 09.30am, 04.25pm, 08.05pm

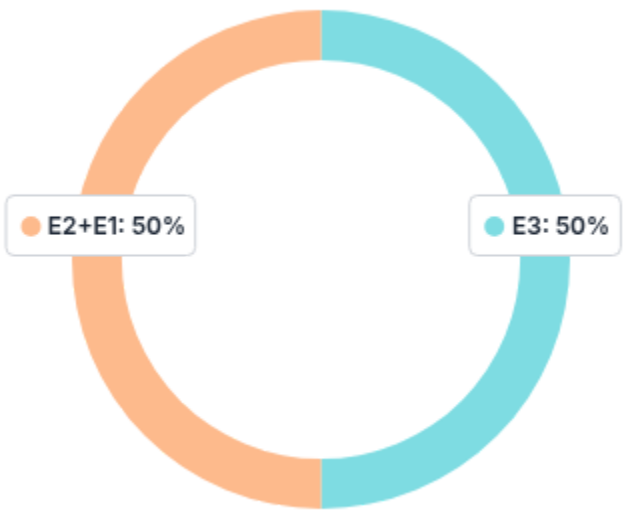
KEY STEROID HORMONES SUMMARY

SERVICE	RESULT	H/L	REFERENCE	UNITS
Estradiol (E2)	0.87		(0.60-1.80)	ug/gCR
Progesterone (serum equivalent)	0.23	L	(1.46-17.00)	ng/mL
Testosterone	3.54		(0.95-4.20)	ug/gCR

Estrogens Balance (as %)

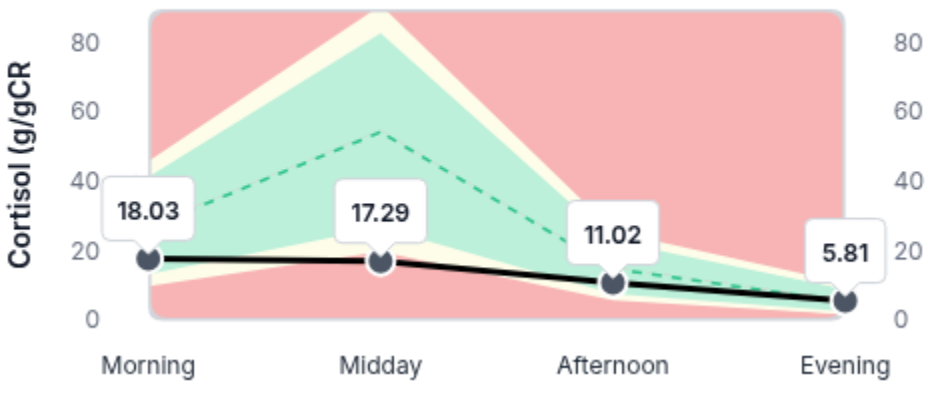


Healthy Estrogens Balance



Adrenal Function - Free Cortisol

SERVICE	RESULT	H/L	REFERENCE	UNITS
Cortisol, Morning	18.03		(10.00-45.00)	ug/gCR
Cortisol, Midday	17.29	L	(20.00-90.00)	ug/gCR
Cortisol, Afternoon	11.02		(6.00-25.00)	ug/gCR
Cortisol, Evening	5.81		(2.00-10.00)	ug/gCR



Adrenal Function - Key Markers

SERVICE	RESULT	H/L	REFERENCE	UNITS
Total Cortisol	16.87		(10.00-35.00)	ug/gCR
Tetrahydrocortisol (THF)	207		(160-560)	ug/gCR
DHEA Prod'n (DHEA+Androst+Etioch)	1059.15		(500.00-3000.00)	ug/gCR
Metabolised Cortisol (THF + THE)	963		(700-1700)	ug/gCR

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PRIMARY ESTROGENS

SERVICE	RESULT	H/L	REFERENCE	UNITS
Estradiol (E2)	0.87		(0.60-1.80)	ug/gCR
Estrone (E1)	2.77		(2.10-5.50)	ug/gCR
Estriol (E3)	0.74		(0.70-2.10)	ug/gCR
Estrogen Quotient - E3/[E2+E1]	0.20	L	(>0.25)	ratio

ESTROGEN METABOLISM - Phase 1

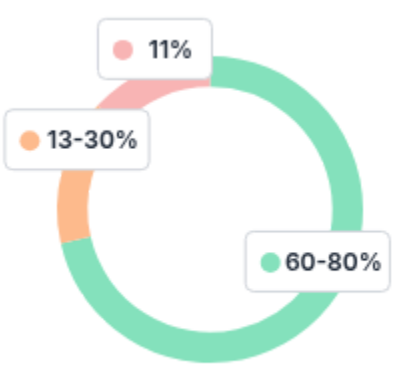
SERVICE	RESULT	H/L	REFERENCE	UNITS
2-OH Estradiol	0.24		(0.20-0.75)	ug/gCR
2-OH Estrone	0.65		(0.60-2.60)	ug/gCR
4-OH Estradiol	0.07	L	(0.08-0.20)	ug/gCR
4-OH Estrone	0.18		(0.17-0.47)	ug/gCR
16-OH Estrone	0.26	L	(0.30-1.10)	ug/gCR
2-OH(E1+E2)/16-OHE1	3.37		(1.20-5.60)	ratio

ESTROGEN METABOLISM - Phase 2

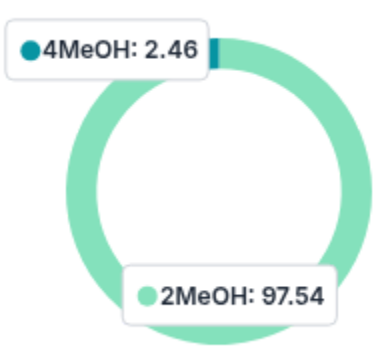
SERVICE	RESULT	H/L	REFERENCE	UNITS
2-MeOH Estradiol	0.03		(0.02-0.10)	ug/gCR
2-MeOH Estrone	0.25		(0.20-0.75)	ug/gCR
4-MeOH Estradiol	0.01		(<0.05)	ug/gCR
4-MeOH Estrone	0.01		(<0.05)	ug/gCR
2-MeOH E1/2-OH E1	0.39		(0.16-0.45)	ratio
4-MeOH E2/4-OH E2	0.08		(0.05-0.35)	ratio
4-MeOH E1/4-OH E1	0.03		(0.03-0.18)	ratio

Metabolism Ph1 % (Hydroxylation)

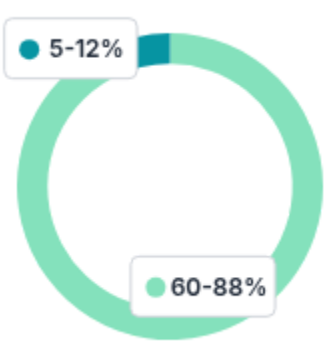
Healthy Ph1 % Metabolism



Metabolism Ph2 % (Methylation)



Healthy Ph2 % Metabolism



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ENDOCRINE DISRUPTORS

SERVICE	RESULT	H/L	REFERENCE	UNITS
Bisphenol A (BPA)	0.15		(<4.00)	ug/gCR
Polyfluoroalkyl Substances (PFAS)	0.05		(<0.70)	ug/gCR
Perfluorooctanoic Acid (PFOA)	0.02		(<0.10)	ug/gCR
Perfluorooctane Sulphonic Acid (PFOS)	0.04		(<0.60)	ug/gCR
Aluminium	1.53		(<14.00)	ug/gCR
Arsenic	30.00	H	(<26.50)	ug/gCR
Cadmium	<dL		(<0.60)	ug/gCR
Chromium	0.36		(<4.60)	ug/gCR
Lead	0.44		(<38.60)	ug/gCR
Mercury	<dL		(<17.9)	ug/gCR
Nickel	0.05		(<1.23)	ug/gCR

PROGESTERONE METABOLISM

SERVICE	RESULT	H/L	REFERENCE	UNITS
Pregnanediol	21	L	(400-1650)	ug/gCR
Allopregnanolone	0.07	L	(2.10-15.00)	ug/gCR
Allopregnanediol	2.01	L	(14.00-78.00)	ug/gCR
3a-Dihydroprogesterone	0.16	L	(0.50-2.50)	ug/gCR
20a-Dihydroprogesterone	0.55	L	(3.00-11.60)	ug/gCR
Deoxycorticosterone	0.27	L	(0.60-2.30)	ug/gCR
Corticosterone	1.34	L	(3.00-11.00)	ug/gCR
Pregnanediol/Estradiol	24	L	(500-1500)	ratio

PRIMARY ANDROGENS

SERVICE	RESULT	H/L	REFERENCE	UNITS
DHEA	16.78		(15.00-135.00)	ug/gCR
DHEA-S	1883.5		(800.0-3000.0)	ug/gCR
Androstenedione	4.33		(3.50-14.50)	ug/gCR
Androsterone	430		(220-980)	ug/gCR
Etiocholanolone	612		(300-1005)	ug/gCR
Testosterone	3.54		(0.95-4.20)	ug/gCR
Epi-Testosterone	2.05		(1.90-4.80)	ug/gCR
DiHydroxyTestosterone (DHT)	0.18	L	(0.25-1.60)	ug/gCR
5a-Androstanediol	0.97	L	(2.50-13.50)	ug/gCR

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KEY ANDROGEN RATIOS

SERVICE	RESULT	H/L	REFERENCE	UNITS
DHEA Prod'n (DHEA+Androst+Etioch)	1059.15		(500.00-3000.00)	ug/gCR
5a-Reductase Activity (Androst/Etioch)	0.70		(0.60-2.20)	ratio
Testosterone/Epi-Testosterone	1.72		(0.40-5.50)	ratio

Nutritional Organic Acids

SERVICE	RESULT	H/L	REFERENCE	UNITS
Xanthurenic Acid	0.51		(<0.96)	mmol/molCR
b-Hydroxyisovaleric Acid	2.3		(<29.0)	mmol/molCR
Methylmalonic Acid	2.2	H	(<1.9)	mmol/molCR
Homovanillic Acid (HVA)	0.3		(0.1-5.3)	mmol/molCR
Vanillylmandelic Acid (VMA)	1.2		(0.4-3.6)	mmol/molCR
Kynurenic Acid	0.5		(<2.2)	mmol/molCR
Quinolinic Acid	4.1		(<9.1)	mmol/molCR

Other Organic Acids

SERVICE	RESULT	H/L	REFERENCE	UNITS
8-OH-deoxyguanosine	1.44		(<2.70)	mmol/molCR
Pyroglutamic Acid	7.67		(4.50-33.00)	mmol/molCR
Indoleacetic Acid	0.03		(<11.00)	mmol/molCR

URINE CREATININES

SERVICE	RESULT	H/L	REFERENCE	UNITS
Creatinine, Urine Pooled	2.95	H	(0.30-2.20)	mg/ml
Creatinine, Urine Morning	2.73	H	(0.30-2.20)	mg/ml
Creatinine, Urine Midday	3.12	H	(0.30-2.20)	mg/ml
Creatinine, Urine Afternoon	2.75	H	(0.30-2.20)	mg/ml
Creatinine, Urine Evening	3.18	H	(0.30-2.20)	mg/ml

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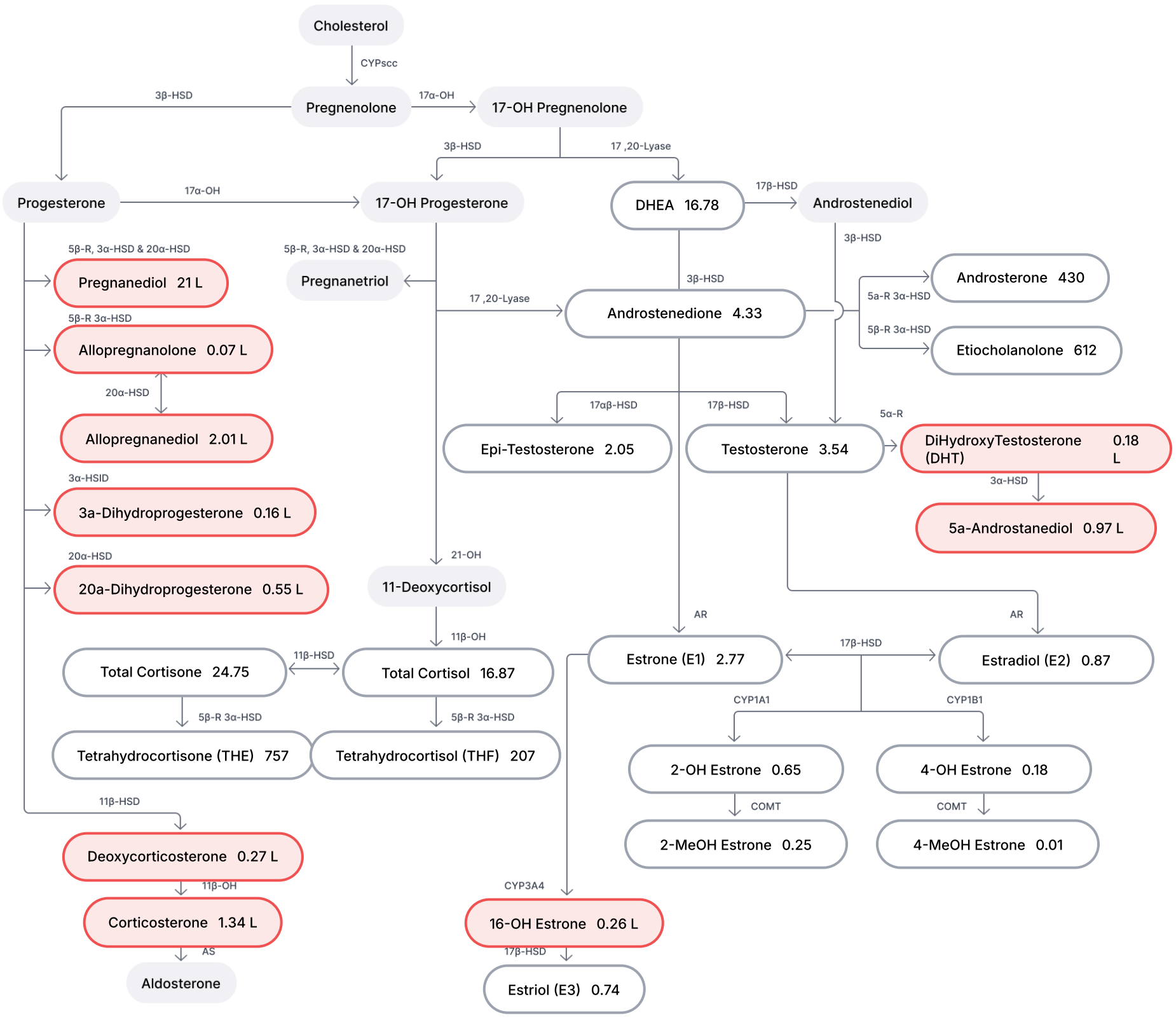

Legend Hormone not tested | Within range | Out of range | L = Low, LL = Critically Low | H = High , HH = Critically High

Enzyme Abbreviations

5α-R	5a-Reductase	**3α-HSD**	3α-Hydroxysteroid dehydrogenase	**AR**	Aromatase
5β-R	5β-Reductase	**3β-HSD**	3β-Hydroxysteroid dehydrogenase	**AS**	Aldosterone Synthase
11β-oH	11β-Hydroxylase	**11β-HSD**	11β Hydroxysteroid dehydrogenase	**CYP**	Cytochrome p450 (scc, 1A1, 1B1 & 3A4)
17α-OH	17α-Hydroxylase	**17α-HSD**	17α-Hydroxysteroid dehydrogenase	**COMT**	Catechol-O-Methyl-Transferase
17,20-Lyase	Same enzyme as 17α-OH	**17β-HSD**	17β-Hydroxysteroid dehydrogenase		
21-OH	21-Hydroxylase	**20α-HSD**	20α-Hydroxysteroid dehydrogenase		

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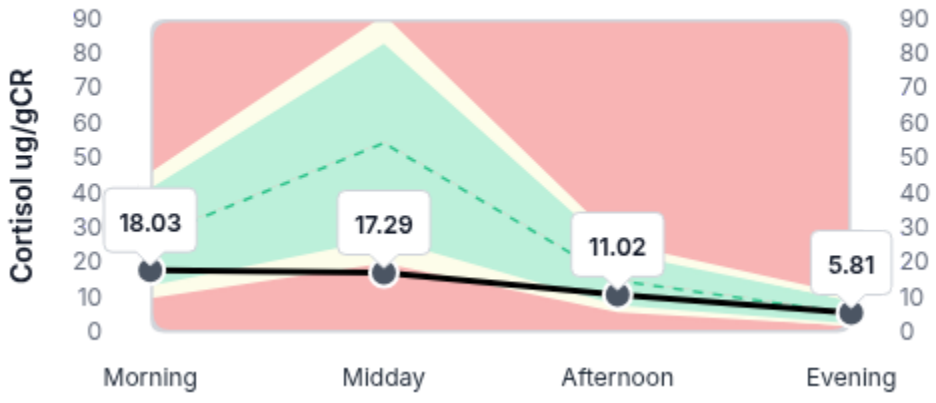
URINARY GLUCOCORTICOIDS

SERVICE	RESULT	H/L	REFERENCE	UNITS
Total Cortisol	16.87		(10.00-35.00)	ug/gCR
Total Cortisone	24.75		(23.00-53.00)	ug/gCR
Total Cortisol/Cortisone	0.68		(0.20-0.70)	ratio
Tetrahydrocortisol (THF)	207		(160-560)	ug/gCR
Tetrahydrocortisone (THE)	757		(400-1450)	ug/gCR
Metabolised Cortisol (THF + THE)	963		(700-1700)	ug/gCR
11b-HSD-Index (THF/THE)	0.27	L	(0.59-1.42)	ug/gCR

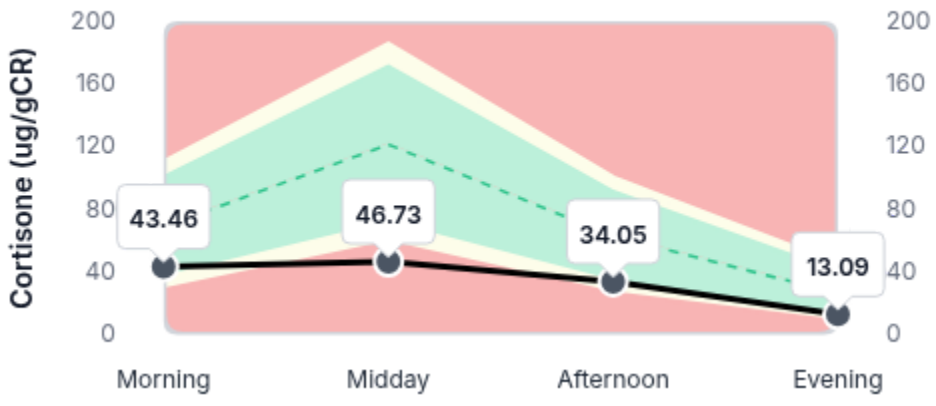
Free Cortisols

SERVICE	RESULT	H/L	REFERENCE	UNITS
Cortisol, Morning	18.03		(10.00-45.00)	ug/gCR
Cortisol, Midday	17.29	L	(20.00-90.00)	ug/gCR
Cortisol, Afternoon	11.02		(6.00-25.00)	ug/gCR
Cortisol, Evening	5.81		(2.00-10.00)	ug/gCR



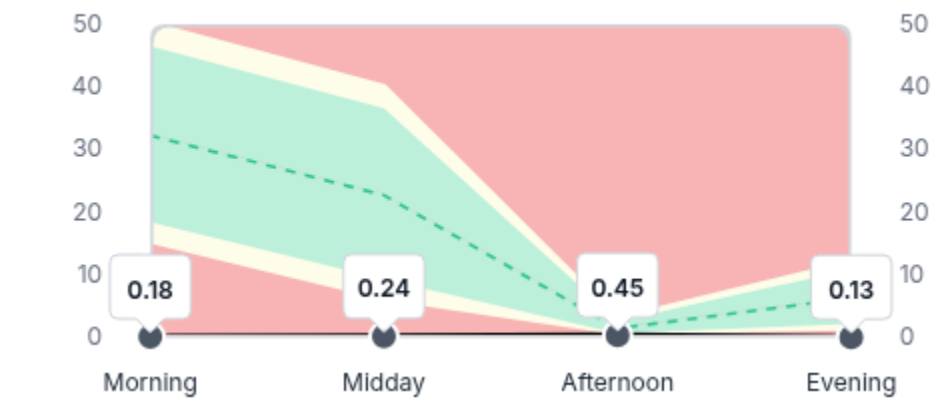
Free Cortisones

SERVICE	RESULT	H/L	REFERENCE	UNITS
Cortisone, Morning	43.46		(30.00-110.00)	ug/gCR
Cortisone, Midday	46.73	L	(60.00-185.00)	ug/gCR
Cortisone, Afternoon	34.05		(28.00-100.00)	ug/gCR
Cortisone, Evening	13.09		(10.00-45.00)	ug/gCR



URINARY MELATONINS

SERVICE	RESULT	H/L	REFERENCE	UNITS
Melatonin, Morning	0.18	L	(15.00-50.00)	ug/gCR
Melatonin, Midday	0.24	L	(6.00-40.00)	ug/gCR
Melatonin, Afternoon	0.45	L	(0.50-3.00)	ug/gCR
Melatonin, Evening	0.13	L	(1.20-12.00)	ug/gCR



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Symptom Score

1. MILD	2. MODERATE	3. SEVERE
Rapid heartbeat	Decreased libido	Anxious
Panic attacks	Headaches	Stress
Sugar craving	Increased urinary urge	Sleep disturbed
Aches and pains	Acne	
Scalp hair loss	Nervous	
Hair dry or brittle	Morning fatigue	
Night sweats	Weight gain - Hips	
Increased body/facial hair	High cholesterol	
Bleeding changes	Constipation	
Water retention	Irritable	
Numbness - feet/hands		
Tearful		
Weight gain - Waist		
Evening fatigue		
Mood swings		

Symptom Categories

Estrogen & Progesterone Deficiency	6.67%	
Estrogen Dominance/Progesterone Deficiency	50.00%	
Low Androgens	26.67%	
High Androgens	55.56%	
Low Cortisol	20.00%	
High Cortisol	27.08%	
Hypometabolism	23.81%	
Metabolic Syndrome	25.93%	

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Urinary Estrogens Comment

ESTROGEN QUOTIENT LOW:

This ratio reflects the relative levels of estriol compared to other estrogens, indicating estrogen metabolism.

A low ratio suggests a dominance of estrone and estradiol over estriol, which may be linked to estrogen dominance, leading to symptoms such as mood swings, heavy periods, and fibroids. Consider further investigations such as serum TFT's.

4-HYDROXY-ESTRADIOL LOW:

4-OH Estradiol is a hydroxylated metabolite of estradiol, linked to increased oxidative stress and potential DNA damage.

Low 4-OH estradiol levels are generally favorable, as they reduce the risk of oxidative stress and DNA damage. This helps minimise the risk of estrogen-dependent cancers such as breast cancer.

16-HYDROXY-ESTRONE LOW:

16α-OH Estrone is a metabolite that can contribute to estrogenic activity and has been associated with an increased risk of hormone-dependent cancers. Low levels of 16α-OH estrone are protective, as they reduce the risk of estrogen-related cancers and symptoms such as breast tenderness, uterine fibroids, and heavy bleeding.

Endocrine Disruptors Comment

ARSENIC ELEVATED:

Elevated urinary arsenic indicates recent or chronic exposure, particularly to inorganic forms. Arsenic interferes with steroid hormone receptor function and disrupts glucocorticoid and mineralocorticoid pathways. It impairs thyroid hormone synthesis and T3/T4 conversion, and may increase estrogen receptor activity, promoting estrogenic effects. Methylation support (folate, B12, betaine), water filtration, and dietary detoxification strategies are recommended.

Progesterone Metabolites Comment

PREGNANEDIOL LOW:

Pregnanediol is a metabolite of progesterone and is used to assess the body’s progesterone status.

Low pregnanediol may indicate inadequate progesterone production, often seen in luteal phase defects or anovulation. Symptoms include irregular cycles, infertility, and mood disturbances.

ALLOPREGNANEDIOL LOW:

Allopregnanediol is a progesterone metabolite with similar effects to allopregnanolone, contributing to the neurosteroid balance. Low allopregnanediol levels may indicate progesterone deficiency, which can lead to menstrual irregularities, infertility, and symptoms like irritability and anxiety.

DEOXYCORTICOSTERONE LOW:

Deoxycorticosterone is a steroid hormone produced by the adrenal glands, involved in mineralocorticoid activity. Low deoxycorticosterone levels can reflect adrenal insufficiency or poor adrenal function, leading to fatigue, low blood pressure, and salt cravings.

20α-DIHYDROPROGESTERONE LOW:

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20α-Dihydroprogesterone is another metabolite of progesterone, playing a role in regulating the menstrual cycle. Low levels may indicate progesterone deficiency, leading to menstrual irregularities, poor luteal phase support, and infertility.

3α-DIHYDROPROGESTERONE LOW:

3α-Dihydroprogesterone is a metabolite of progesterone with anxiolytic and calming properties. Low levels of 3α-dihydroprogesterone may result in increased anxiety, irritability, and poor sleep, commonly seen in luteal phase defects or progesterone insufficiency.

PREGNANEDIOL/ESTRADIOL RATIO LOW:

The Pgdiol/E2 ratio compares progesterone metabolism (via pregnanediol) to estradiol metabolism, reflecting estrogen-progesterone balance. A low ratio suggests an estrogen-dominant state, which can contribute to symptoms like heavy periods, fibroids, PMS, and an increased risk of endometrial cancer.

CORTICOSTERONE LOW:

Corticosterone is an adrenal steroid that plays a key role in stress responses and mineralocorticoid balance. Low corticosterone may suggest adrenal insufficiency, leading to symptoms like fatigue, weight loss, hypotension, and salt cravings.

Urinary Androgen Comment

DIHYDROTESTOSTERONE (DHT) LOW:

5α-DHT is a potent androgen derived from testosterone, involved in male-pattern hair growth and other androgenic effects. Low 5α-DHT levels may indicate reduced androgenic activity, leading to symptoms like decreased libido, muscle mass, and energy.

ANDROSTANEDIOL LOW:

5α,3α-Androstanediol is a metabolite of dihydrotestosterone (DHT), used to assess androgen metabolism. Low 5α,3α-androstanediol levels may reflect reduced androgen activity, leading to symptoms like low libido, fatigue, and muscle loss.

Urinary Cortisol Comment

11b-HSD INDEX (THF/THE) LOW:

A low THF/THE ratio suggests reduced 11β-HSD1 activity, leading to decreased conversion of cortisone to active cortisol in tissues such as the liver and fat. This reduces intracellular cortisol action, potentially mimicking cortisol deficiency at the cellular level despite normal systemic levels. Low 11β-HSD1 activity has been linked to increased fatigue, reduced inflammatory regulation, and impaired metabolism. Consider anti-inflammatory and adrenal support, as well as cofactor repletion (e.g., NAD+, zinc).

Urinary Melatonin Comment

URINE MELATONINS INTERPRETATION:

Consistently low or low-normal melatonin levels across all time points suggest potential circadian rhythm disruption or poor pineal gland function. This can be indicative of insufficient sleep quality or quantity, excessive exposure to artificial light (especially blue light from screens), or stress-related dysregulation. Symptoms may include difficulty falling asleep, poor sleep quality, or insomnia. Treatment strategies include improving sleep hygiene, minimising light exposure before bedtime, and promoting relaxation through dietary support such as magnesium or melatonin supplementation in the evening. Lifestyle changes such as reducing caffeine intake and managing stress levels are also beneficial. If melatonin supplementation is warranted, daily doses of 0.5 mg to 5 mg with 2mg being the most common dose shows similar effectiveness, although sleep onset may be quicker at the higher dose.

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METHYLMALONATE (MMA) ELEVATED:

Elevated urinary methylmalonate indicates a functional vitamin B12 deficiency, impairing the conversion of methylmalonyl-CoA to succinyl-CoA. B12 is essential for methylation pathways that regulate DNA synthesis and steroid hormone receptor expression. Deficiency may lead to disrupted estrogen and androgen signaling via impaired methylation of hormone receptors and detoxification enzymes. Assessment of B12 status and methylation capacity is recommended, particularly in cases of hormonal imbalance.

Methodology

Liquid Chromatography-Mass Spectrometry (LC-MS/MS/MS), Inductively Coupled Plasma Mass Spectrometry (ICP-MS)