

Diagnos-Techs, Inc.

Clinical & Research Laboratory
 PO BOX 389662, Tukwila, WA 98138-0662
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 CLIA License # 50D0630141

Test	Description	Result	Ref Values
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ASI Adrenal Stress Index

TAP	Free Cortisol Rhythm			
	07:00 - 08:00 AM	8	Depressed	13-24 nM
	11:00 - Noon	1	Depressed	5-10 nM
	04:00 - 05:00 PM	1	Depressed	3-8 nM
	11:00 - Midnight	3	Normal	1-4 nM
	Cortisol Burden:	13		23 - 42

The cortisol burden reflects the area under the cortisol curve. This is an indicator of overall cortisol exposure, where high values favor a catabolic state, and low values are sign of adrenal deterioration.

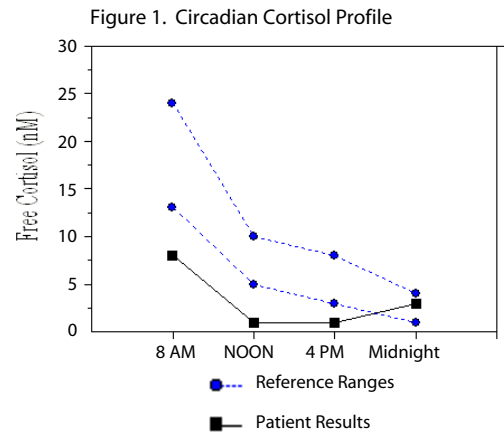


Figure 1. Circadian Cortisol Profile

Figure 2.

The Cortisol release inducers fall into 4 broad categories shown in the adjacent flowchart. Long term adrenal axis maintenance and restoration, require optimization of all the cortisol inducers.

Remarks: Depressed morning cortisol, < 13 nM, is suggestive of marginal HPA (Hypothalamic-Pituitary-Adrenal) performance. Normal rhythms exhibit highest cortisol value for the day at 7 - 8 AM.

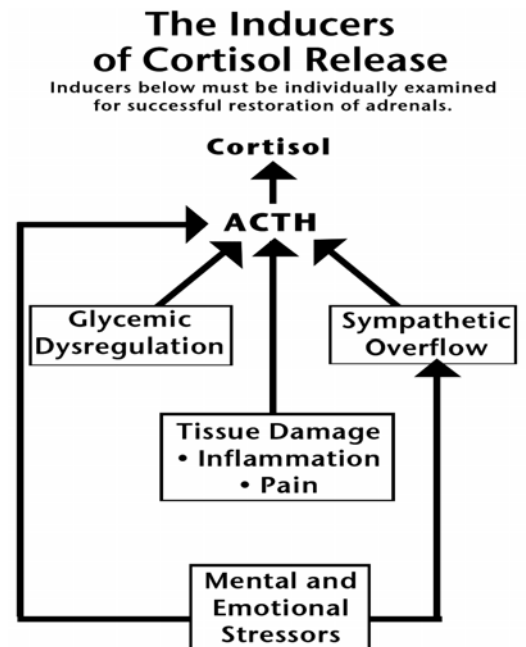


Figure 2.

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Code	Test Name	Values	Provisional Ranges
<u>STP</u>	Saliva Thyroid Study		
fTSH	Thyroid stimulating hormone	40 Normal	Borderline Low: 20-25 nIU/ml Normal: 26-85 nIU/ml Borderline High: 86-120 nIU/ml
fT4	L-Thyroxine	0.24 Normal	Normal: 0.17-0.42 ng/dl
fT3	Triiodo-thyronine	0.41 Normal	Borderline Low: 0.21-0.27 pg/ml Normal: 0.28-1.10 pg/ml
TPO	Thyroid Microsomal Ab, SIgA	Negative	Normal: Negative

BREAST PROLIFERATION INDEX (BPI)

Explanation:

Several reproductive hormones exert trophic effects on the breast tissue i.e. cellular division and differentiation. **Unchecked trophic stimulation can lead to undesired proliferation of the tissue.** Over time, breast cysts, hyperplasia and lesions are promoted. Estradiol (E2), Estriol (E3) and Estrone (E1) in descending order of potency exert proliferative influences on breast tissue. **Progesterone also exerts a proliferative influence with increasing concentration.** On the other hand, testosterone, in the normal to mildly hyper-physiologic range, **exerts a significant estrogen antagonizing and anti-proliferative effect which modulates and reduces estrogenic proliferative effects.**

Note:

Chronic exposure to high concentration of proliferative hormones is usually required to promote the initial proliferative stages of estrogen-sensitive lesions. However, the maintenance of the lesions **may not require high concentrations** of proliferative hormones. This phenomenon explains the difficulties and prolonged time required to reverse tissue proliferation that has already taken place.

What does the BPI Index mean?

The **BPI** is a graphical comparison of the proliferative and anti-proliferative hormone activity of the patient. The combined proliferative activity of the three estrogens plus the concentration-dependent contribution of **progesterone** is represented on the **horizontal graph axis (X-axis)**. The **testosterone** anti-proliferative activity is represented on the **vertical axis (Y-axis)**.

The **BPI** graphic grid has 8 distinct numbered zones with an explanatory key below the graph. The patient values of E1, E2, E3, progesterone and testosterone are used to calculate indices and plotted as a solid square that appears one of the numbered zones.

UTERINE PROLIFERATION INDEX (UPI)

Explanation:

It is established that estrogens including Estradiol (E2), Estriol (E3) and Estrone (E1) in descending order of potency can **induce proliferative changes in the endometrium** at any age. Endometrial hyperplasia with rapid blood vessel formation is one of the major outcomes of estrogen hormone replacement therapy in postmenopausal women. On its own, the estrogen proliferative effect is additive and cumulative over time and is manifested clinically as breakthrough bleeding. Estrogens help organize and capacitate the endometrial cells to respond to progesterone-mediated functionalization with view of constructing an embryo-receptive lining.

Progesterone helps transform the rapidly growing cells into mature ones. It prevents the endometrium from rapidly outgrowing its developing blood supply. Progesterone inhibits uncontrolled endometrial cell growth that otherwise would lead to proliferative lesions.

What does the UPI Index mean?

The **UPI** is a graphical comparison of the correlation between the proliferative hormone activity (Measured Estrogenic Activity-EA) and the Anti-proliferative activity (Measured Progesterone levels). The EA takes into account the genomic and non-genomic proliferative activity of the three main estrogens. The EA is represented on the **horizontal axis (X-axis)**. The progesterone anti-proliferative activity is represented on the **vertical axis (Y-axis)**.

The **UPI** graphic grid has 8 distinct numbered zones with an explanatory key below the graph. The patient values of E1, E2, E3 and progesterone are used to calculate indices and appear as a solid square in one of the numbered zones.

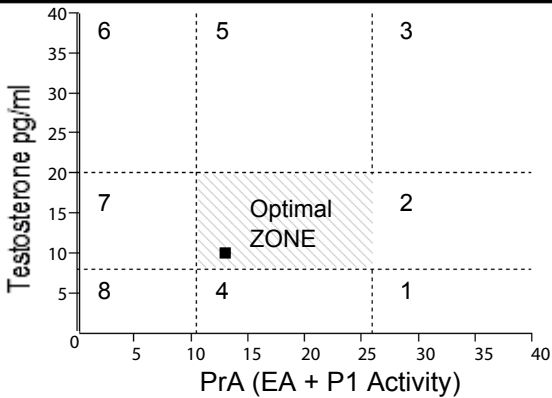
Why Choose Grid Analysis over Hormone Ratios?

Proper hormone balance is not achieved at all concentrations. It is only achieved within matched physiologic concentration ranges of the respective hormones. The use of arithmetic ratios of sex hormone concentrations for the purpose of reference range analysis, as used by other laboratories, is usually deceiving. The absolute concentrations of the hormones are extremely important and are not included in arithmetic ratio analysis.

For more accuracy in interpretation, a two dimensional **Zoned Grid Method** is used in this report. **The following example** will illustrate the inadequacy of the arithmetic ratio method. At high concentrations of the respective hormones (**Zone 3** in the **BPI**, and **Zone 1** in the **UPI**), you may have a perfect arithmetic ratio between the estrogens and testosterone which other labs consider normal. However, the following adaptive processes may come into play:

- I. At high hormone concentrations, receptor involution takes place blocking the binding of hormone to receptors. This may lead to unpredictable or paradoxical effects.
- II. At high hormone concentrations there is receptor confusion, i.e. one hormone cross-reacts non-specifically with the receptors of another leading to unpredictable effects.
- III. At high concentrations certain hormones inhibit the synthesis of other antagonistic hormones, or promote the production of synergistic ones.

Breast Proliferation Index (BPI) TM

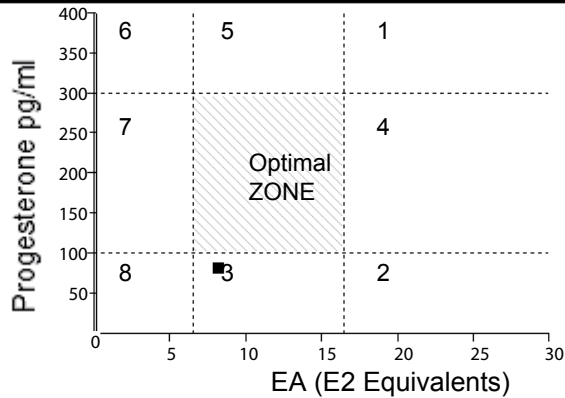


Legend

- Patient
- PrA - Proliferative Activity
- EA - Estrogenic Activity

- 1. Enhanced Proliferation.
- 2. High Proliferative Potential.
- 3. Hormone Overload.
- 4. Pro-Proliferative.
- 5. Mild Androgen Dominance.
- 6. Frank Androgen Excess.
- 7. Female Hormone Deficit.
- 8. Hypogonadism with Atrophy.

Uterine Proliferation Index (UPI) TM



- 1. Enhanced Proliferation.
- 2. High Proliferative Potential.
- 3. Potentially Proliferative.
- 4. Accentuated Hormone Imbalance.
- 5. Mild Imbalance.
- 6. Pre-Atrophic.
- 7. Pro-Atrophic.
- 8. Atrophic.

Your hormone values are in the Optimal Zone.

Explanation:

OPTIMAL ZONE

This zone indicates balanced estrogen, progesterone and testosterone levels. Unless otherwise indicated on this report, patients in this zone are encouraged to maintain the current hormonal regime when applicable, and refrain from hormone supplementation. If patient is symptomatic further investigation is merited and should include an adrenal axis evaluation (e.g. Adrenal Stress Index profile).

Your hormone values are in Zone 3.

Explanation:

ZONE 3: POTENTIALLY PROLIFERATIVE

Zone 3 represents normal estrogenic activity not counteracted by sufficient amounts of progesterone resulting in a relatively proliferative environment. This state favors:

- I. Mild target tissue proliferation: endometrial thickening, uterine bleeding, fibroids, infertility etc.
- II. Somatic: Mild increase in body fat deposition, weight gain and water retention.
- III. Nervous system (CNS) dysfunction which includes cognitive changes, headaches, anxiety, panic attacks, insomnia and depression with mood swings.

What Next?

Consider the restoration of Progesterone (Progesterone + Pregnenolone)

Need a more complete explanation of the Indexes? See respective sections on the following page.

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PHP1. Postmenopausal Hormone panel -- Short

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Hormone	Result	Notes	Reference Ranges
TTF - Testosterone	10	Normal	Borderline: 5-7 pg/ml Normal: 8-20 pg/ml
E1 - Estrone	16		Normal for Age 40-49: 38-68 pg/ml
E2 - Estradiol	6		Postmenopause-No HRT: 1-4 pg/ml HRT Target Range: 5-13 pg/ml Follicular: 5-13 pg/ml Luteal: 7-20 pg/ml
E3 - Estriol	27		Postmenopause-No HRT: 7-18 pg/ml HRT Target Range: 14-38 pg/ml Cycling Female: 12-25 pg/ml
P1 - Progesterone	81		Postmenopause-No HRT: 5-95 pg/ml HRT Target Range: 100-300 pg/ml Follicular: 20-100 pg/ml Luteal: 65-500 pg/ml

More interpretation and the action plan on following pages.

Diagnosis Code: Not Provided To The Lab.

Please Note: All examples of patient treatment or therapy are for illustrative and/or educational purpose. Use this report in context of the clinical picture before initiating hormone or other therapies.

COURTESY INTERPRETATION/Technical support available upon request, to Physicians Only

Test	Description	Result	Ref Values
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- a. Exercise program
- b. Vitamin E supplementation
- c. Botanical adaptogen supplementation.

COURTESY INTERPRETATION of test and technical support are available upon request, to Physician Only

Test	Description	Result	Ref Values
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Example of restoration Plan

All Examples of Restoration Plans are for Illustrative/Educational Purpose Only. Actual report data should be used within clinical context. Consider use of Pregnenolone, the pivotal precursor in production of cortisol and other steroids to replenish adrenal reserves anticipation of adrenal output recovery. Typical supplementation dose is: 1 mg/kg/day split in two divided doses.

Consider use of Pantothenic acid, Pyridoxine, zinc, copper, ascorbic acid and free form bioflavonoids as a nutritional support of the adrenal gland. A typical example of a 3 months daily supplementation schedule is:

- Pantothenic acid: 500 mg BID
- Pyridoxine: 50 mg BID
- Elemental Zinc: 10 mg BID
- Copper: 1 mg BID
- Ascorbic Acid: 1000 mg BID
- Free Form Flavonoids: 500 mg BID

Consider use of Biotin, an important cofactor in the maintenance of enzymatic production of cortisol from pregnenolone. Biotin also plays a role in blood sugar stabilization through optimization of glucose phosphokinase activity. A typical example of Biotin supplementation course is:

2000 microg. BID for 3 - 5 months.

Example- Cortisol Augmentation or Licorice Supplementation

Observed Cortisol Value(nM)	Intake Time	Typical Cortisol Dose	-OR- Whole Licorice Extract Glycyrrhizic Acid Content
Morning Value	6-7AM		10-15mg
10-13		5mg	
5-9		7.5mg	
less than 5		12.5mg	
Noon Value	11AM-12PM	7.5mg	5-10mg
less than 4			
Afternoon Value	3-4PM	5mg	5-10mg
less than 3			

*Do not use licorice in overtly hypertensive individuals. Do not exceed a total daily dose of 25-35mg of glycyrrhizic acid. Re-test by 8th week of use. Avoid use of licorice in pregnant women.

Example of DHEA Augmentation: Female

Weekly Protocol	Oral DHEA		-OR- Sublingual DHEA
	AM Dosage	PM Dosage	Daily Dosage
1st-3rd week	5mg	None	2-3mg once a day
4th-12th week	5mg	5mg	2-3mg twice a day
13th week	Retest DHEA		

Note: DHEA augmentation not applicable in cases of Testosterone & Estrogen associated diseases. Patient-specific treatments to be determined by healthcare providers.

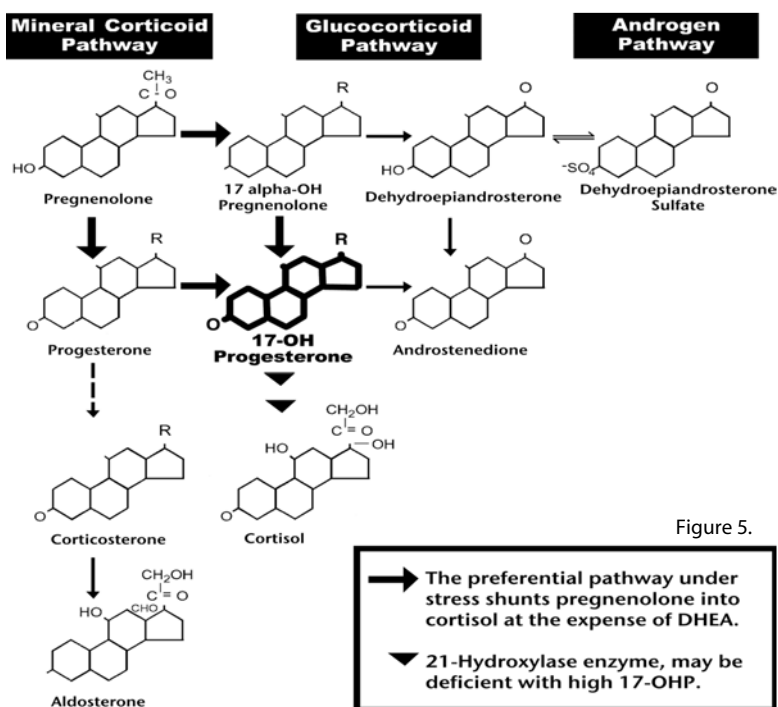
To improve SIgA levels consider two aspects:

- 1) Reduction in suppression when applicable:
 - a. Optimize cortisol/DHEA balance
 - b. Balance sympathetic/parasympathetic activity
 - c. Rule out inherited IgA production deficit
- 2) Production Enhancement may include:

Test	Description	Result	Ref Values
P17-OH	17-OH Progesterone	23	Normal

Adults
 Optimal: 22-100 pg/ml
 Borderline: 101-130 pg/ml
 Elevated: >130 pg/ml

Figure 5. Adrenal Steroid Synthesis Pathway



MB2S	Total Salivary SIgA	7	Depressed
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Normal: 25-60 mg/dl
 Borderline: 20-25 mg/dl

A depressed mucosal SIgA may be attributed to one or more of the following reasons:
 1- Excessive chronic cortisol output causes a reduction in the number of SIgA producing immunocytes. Appropriate restorative treatments have been shown to produce incremental improvements in SIgA.
 2- Excessive sympathetic activity causes inhibition of SIgA release from the mucosal immunocytes.
 3- Chronic deficits in cortisol and/or DHEA levels.
 4- Possible systemic deficit in capacity to produce IgA - an inherited problem. Rule out possibility with a serum IgA test. A normal finding rules out this possibility.

Basic Facts About SIgA

1. Secretory IgA (SIgA) is secreted by the various mucosal surfaces. It is mostly a dimeric molecule. Less than 2% of Saliva is of serum origin. The secretory component of SIgA stabilizes it against enzymatic and bacterial degradation.
2. The main functions of SIgA include Immune Exclusion, Viral and Toxin Neutralization, Plasmid Elimination, and Inhibition of Bacterial Colonization. SIgA immune complexes are not inflammatory to the mucosal surfaces.
3. Production of SIgA is adversely affected by stress which is mediated by increased cortisol and/or catecholamine levels.

FI4	Gliadin Ab, SIgA	2	Negative
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Borderline: 13-15 U/ml
 Positive: >15 U/ml

Notes on Gliadin Ab Test

Gliadins are polypeptides found in wheat, rye, oat, barley, and other grain glutes, and are toxic to the intestinal mucosa in susceptible individuals. Healthy adults and children may have a positive antigliadin test because of subclinical gliadin intolerance. Some of their symptoms include mild enteritis, occasional loose stools, fat intolerance, marginal vitamin and mineral status, fatigue, or accelerated osteoporosis.
 Scan. J. Gastroenterol. 29:248(1994).

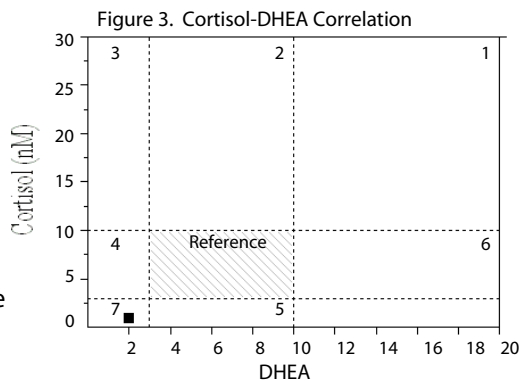
Test	Description	Result	Ref Values
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DHEA	Dehydroepiandrosterone Pooled Value	2	Depressed DHEA Adults (M/F): 3-10 ng/ml
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Figure 3 shows your cortisol-DHEA correlation was in:

➡ Zone 7 - Adrenal Fatigue

This zone represents a fatigue or suppression of the adrenals with overt deficits in either or both cortisol and DHEA production. Individuals with suppressed hypothalamic pituitary axis due to exogenous steroid overuse may also show results that fall in zone 7.



CORTISOL-DHEA CORRELATION ZONES

1. Adapted to stress.
2. Adapted with DHEA slump.
3. Maladapted Phase I.
4. Maladapted Phase II.
5. Non-adapted, Low Reserves
6. High DHEA.
7. Adrenal Fatigue.

ISN	Insulin Fasting	<3		Normal: 3-12 uIU/mL
	Post-prandial	6	Normal	Optimal: 5-20 uIU/mL

Why Test for Insulin?

Insulin activity is affected by the stress and cortisol responses. Chronic stress with cortisol elevation antagonizes insulin, and may cause functional insulin resistance. Furthermore, chronic hypercortisol causes hyperinsulin responses to carbohydrate intake. Chronic insulin resistance and overproduction lead to pancreatic exhaustion.

General information about insulin values.

Fasting: This insulin value is elevated in cases of insulin resistance.

Post Prandial: This insulin value varies with type of meal and time of sample collection. See figure 4b. Adapted, Br. J. Nutr. 2003, 90:853 To obtain the most meaningful results, instruct patient to eat 50g of carbohydrate or what is equivalent to 200 calories about 45-90 minutes before noon sample collection. Examples: 2 slices of white bread and 1 cup of orange juice OR 1 cup of cooked oatmeal and 1 cup of orange juice OR 2 ounces of corn flakes snack.

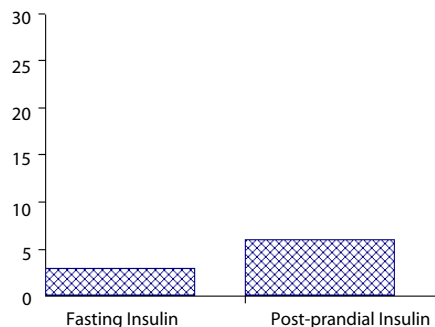


Figure 4a. Insulin Levels

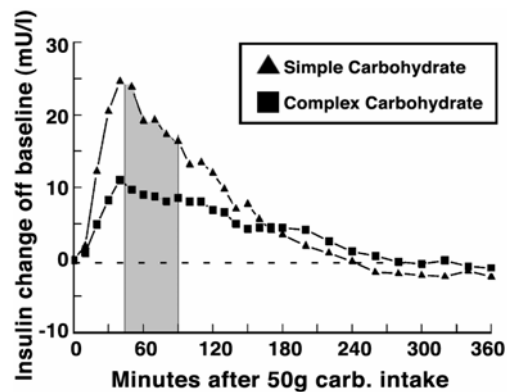


Figure 4b. Serum Insulin - Time Curve

Shaded area is optimal period of post-prandial collection.

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Code	Test Name	Result / Notes	Reference Values/Key
ASC	Roundworm (Ascaris lumbricoides) SIgA	Not detected	Normal Result: Not detected
F11	Milk (Casein) Ab. SIgA	Negative	Normal: Negative.
F12	Soy (Protein) Ab. SIgA	Negative	Normal: Negative.
F13	Egg (Albumin) Ab. SIgA	Negative	Normal: Negative.
FSH	Follicle Stimulating Hormone	84	Premenopause: <125 uIU/mL Postmenopause: 90-500 uIU/mL
LH	Luteinizing Hormone	35	Premenopause: 8-30 uIU/mL HRT: 8-30 uIU/mL Postmenopause-No HRT: 25-200 uIU/mL

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