



# Physician Road Map

**Interpretive Guide and Suggested Protocols  
for the ARK Adrenal Stress Profile**

SECOND EDITION



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## Introduction

Given the types of lifestyles Americans live, the concept of stress has invaded our social and biological view of being human. But while we are often told of stressful events (loss of family member, divorce, major life changes), what actually defines stress from a physiological perspective has been more difficult to grasp. Some have said that nearly 75% of the diseases prevalent in western society today are somehow related to the stress mechanisms of the body.

Nearly every one of your patients experiences events that challenge their stress response and have an impact on their health. Determining which ones need adrenal support and recovery requires time to assess and interpret adrenal tests, and resources to develop appropriate therapies and educate patients on the important role of lifestyle, and manage diet and exercise.

The Adrenal Recovery Kit (ARK) is specifically designed to help you and your patients easily discover, assess and manage adrenal stress and fatigue. This Road Map is a guide to help you understand the underlying physiology that drives adrenal stress and the underlying philosophy of the ARK as it addresses adrenal physiology. It is also designed to help you address adrenal stress in a comprehensive way, while being flexible enough to be used with the current therapies you may already be recommending.

### This Guide Will:

- Explain how to assess the body's response to stress
- Clarify the role of cortisol and adrenal stress in chronic disease conditions
- Help you direct patients in identifying their unique stressors
- Identify three stages of adrenal stress through correlations of testing and symptom questionnaires
- Help interpret common salivary cortisol and DHEA tests
- Offer suggested protocols for each stage of adrenal stress/exhaustion
- Explain the rationale for products developed specifically for the ARK program
- Offer support to make adrenal recovery a successful part of any practice



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# Implementing the ARK in 4 Easy Steps

**STEP 1**  
In-Office

**A: Give Patient Questionnaire**

(Road Map Appendix pg. 46-48)

**B: Take Health History—Keying In On:**

- Mental/Emotional Stressors
- Glycemic Dysregulation
- Chronic Inflammation

**STEP 2**  
At-Home

**A: Send Patient Home with a Test Kit** (ARK201 or ARK205)

**B: Send Patient Home with an ARK Starter Kit**

(Glycemic Foundation, Tranquil Moment, Tempo Bars and Patient Guide)

**C: Encourage Lifestyle Changes to Start Immediately**

**STEP 3**  
In-Office  
2-3 Weeks  
Later

**A: Use Test Results, Questionnaire and Patient History to Identify Stage of Adrenal Stress**

**B: Develop Protocols Using Suggestions in the ARK Physician Road Map**

**Stage 1:  
Acute Adrenal  
Dysfunction**

- DHEA is borderline low, low or normal
- Total cortisol sum is high
- At least one cortisol is high

**Road Map Pages:  
17-23**



**Stage 2:  
Adrenal Fatigue**

- DHEA is borderline low or low
- Total cortisol sum is normal
- AM, noon or afternoon cortisols are low or borderline low

**Road Map Pages:  
25-31**



**Stage 3:  
Adrenal Exhaustion**

- DHEA is borderline low or low
- Total cortisol low
- Most cortisols are low or borderline low

**Road Map Pages:  
33-39**



\*Clinical support is available to help customize suggested protocols.

**STEP 4**

**Retest**

Adjust Protocol According to Patient Progress



## Steps to consider when implementing the ARK in your office

1. Present patient with Adrenal Questionnaire (see appendix) for completion in office or upon return for next appointment. The questionnaire may direct the practitioner when choosing the appropriate test and will help patients see their symptoms in relation to adrenal exhaustion. (See FAQ on page 55 for more instructions on choosing the right lab test for your patients.)
2. After practitioner review of questionnaire provide patient with appropriate ARK Starter Kit: ARK Patient Guide, Glycemic Foundation, Tranquil Moment tea and two Tempo Bars. Explain that the patient will experience positive results right away with the components of the Starter Kit – encouraging them to stay committed to the ARK program. Schedule next appt. in 2 weeks to discuss the lab test evaluation.
3. Patient goes home to collect samples and sends directly to laboratory for analysis. Instructions for expressing saliva samples are inside each kit – along with mailing instructions and pre-paid envelope.
4. Hold patient accountable for reading patient guide, implementing lifestyle changes and beginning the products in the Starter Kit while waiting 2 weeks for test results.
5. Review test results with patient and provide supplement protocol.
6. It is recommended to have patient follow up one week after beginning product protocol to review progress/improvements in symptoms, ask any questions and determine if adjustments are needed.
7. Patients are recommended to continue on protocol with monthly office visits to review progress with making lifestyle changes to reduce stress.
8. Retesting of adrenal function should occur after significant changes in stress have been achieved. This is usually 3 to 6 months after initial testing.
9. For a more accurate test of the patients' adrenal function, when retesting we suggest patient stop adrenal products including DHEA and Pregnenolone for at least 5 to 7 days.

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## Sources of Chronic Stress

### Mental & Emotional:

- Anger
- Worry
- Fear
- Grief
- Bitterness
- Hopelessness
- Guilt
- Depression
- Anxiety
- Job/performance demands
- Financial pressures
- Relationship conflict

### Tissue Damage/Inflammation/Pain:

- Surgery
- Trauma
- Injury
- Infections
- Inhalant allergies
- Food sensitivities
- Crohn's Disease
- Colitis
- Celiac
- Arthritis
- Toxins – heavy metals, molds, chemicals

### Glycemic Dysregulation:

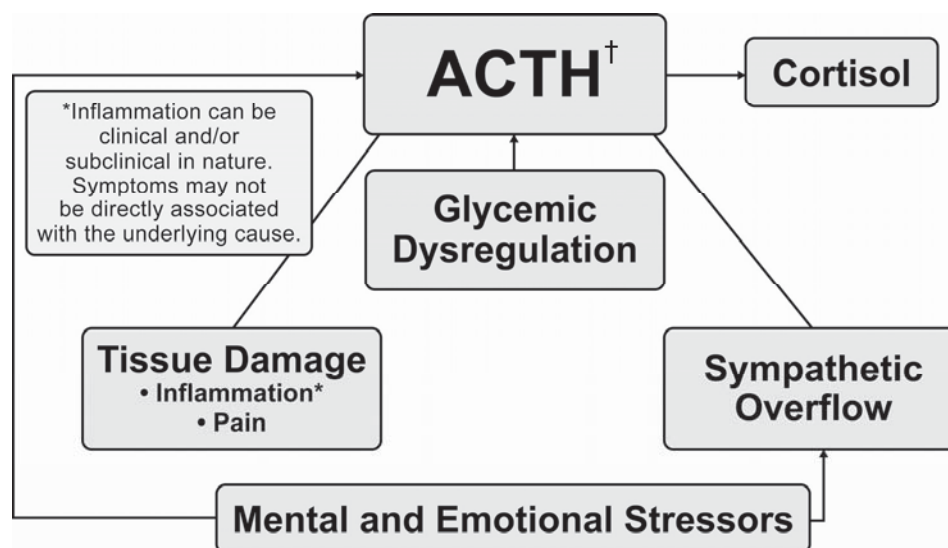
- Skipping meals
- Calorie deficit dieting
- High carbohydrate intake
- Alcoholism
- Nutritional deficiencies

### Others:

- Temperature extremes
- Sleep deprivation
- Excessive exercise
- Chronic illness
- Electromagnetic fields
- Light cycle disruption (i.e. third shift work)
- Noise pollution
- Caffeine or drug abuse

## Inducers of Release of ACTH Resulting in Excess Cortisol Output and Adrenal Stress

Fig. 1



†ACTH=Adrenocorticotropin Hormone

## Stress-What is it?

While it may seem obvious to most, the definition of “stress” has not been easily agreed upon by biologists over the past 75 years. Does it define the necessary changes in adapting to a stressor, or the malfunction of not adapting to these same stressors? When we think of stress, we often think of negative stress, or as some would say “distress;” but positive events (wonderful surprises, passion, athletic competition) can elicit seemingly identical responses from a physiological perspective.

The scientist who, more than anyone, brought the concept of stress to the forefront is Hans Selye. His book *The Stress of Life* (1), written for the lay audience, popularized the notion of stress as the general response to a wide variety of insults. His research, mostly with rats, revealed a recurring set of physiological outcomes (hypertrophy of the adrenal gland, atrophy of the lymphatic organs, and ulcers in the stomach) when these rats were exposed to a variety of insults. He later formed what he called the general adaptation syndrome (G.A.S.) in a three-stage format:

1. The **alarm reaction**, involving increased adrenocortical secretion and activation of the sympathoadrenal system.
2. The **stage of resistance**, involving the balancing of the adrenocortical hormones' affect on water and electrolyte balance and carbohydrate metabolism. The "true adaption" to stress.
3. The **stage of exhaustion**, involving the depletion or exhaustion of the adrenal glands' ability to make corticosteroids.

We recognize that Selye has simplified a very complex set of responses and has some limitations (2). However, this three-stage model is still the most commonly used in clinically defining adrenal status and is incorporated into the ARK paradigm as the three stages: 1. Acute Adrenal Dysfunction, 2. Adrenal Fatigue, 3. Adrenal Exhaustion. Adrenal failure or Addison's disease may be considered the fourth and last stage.

### Adrenal Gland

The adrenal glands are small (5 grams) glandular tissues lying atop each of the kidneys (See figure 2). Originally called suprarenal glands because of their location, they were first discovered by the anatomist Bartolomaeus Eustachius, further described by Cuvier and then later by Thomas Addison. The inner portion, called the medulla, secretes epinephrine and norepinephrine and is an extension of the sympathetic nervous system. The larger outer portion, called the cortex, is responsible for secreting various steroid hormones. From every point of view, functional, structural and developmental, the adrenal cortex and medulla can be considered two separate glands. Of the nearly 30 steroid hormones produced by the adrenal cortex, the principal ones include aldosterone (a mineralocorticoid), cortisol (a glucocorticoid) and various sex hormones and their precursors (DHEA, androstenedione). The mineralocorticoids play an essential role in regulating potassium and sodium levels and water balance. DHEA and its metabolites have diverse effects during the lifecycle of the individual.

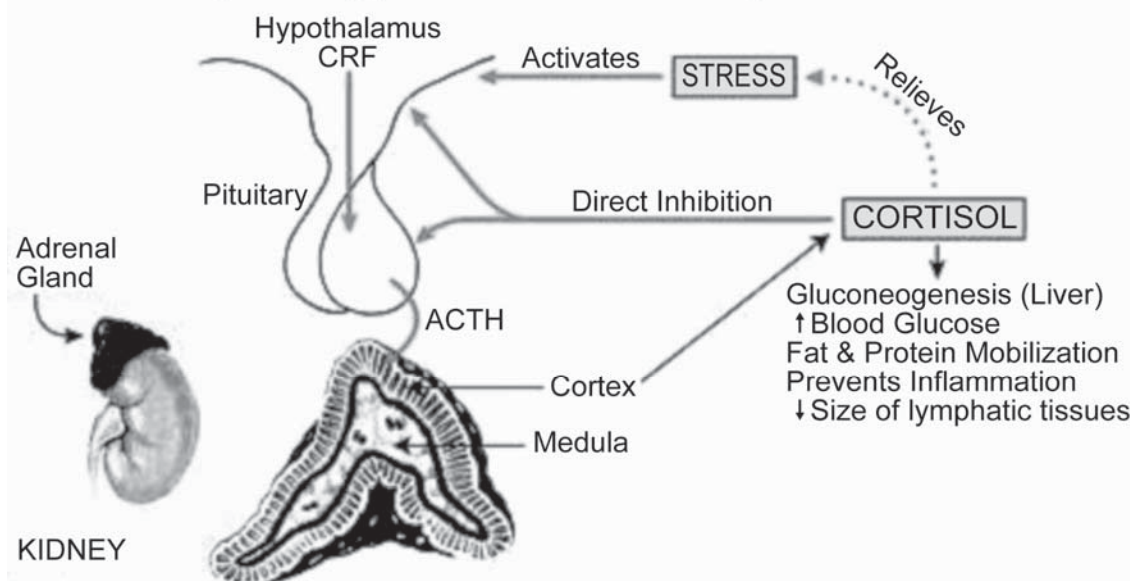
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Fig. 2

## Controlling The Hypothalamic - Pituitary -Adrenal Axis



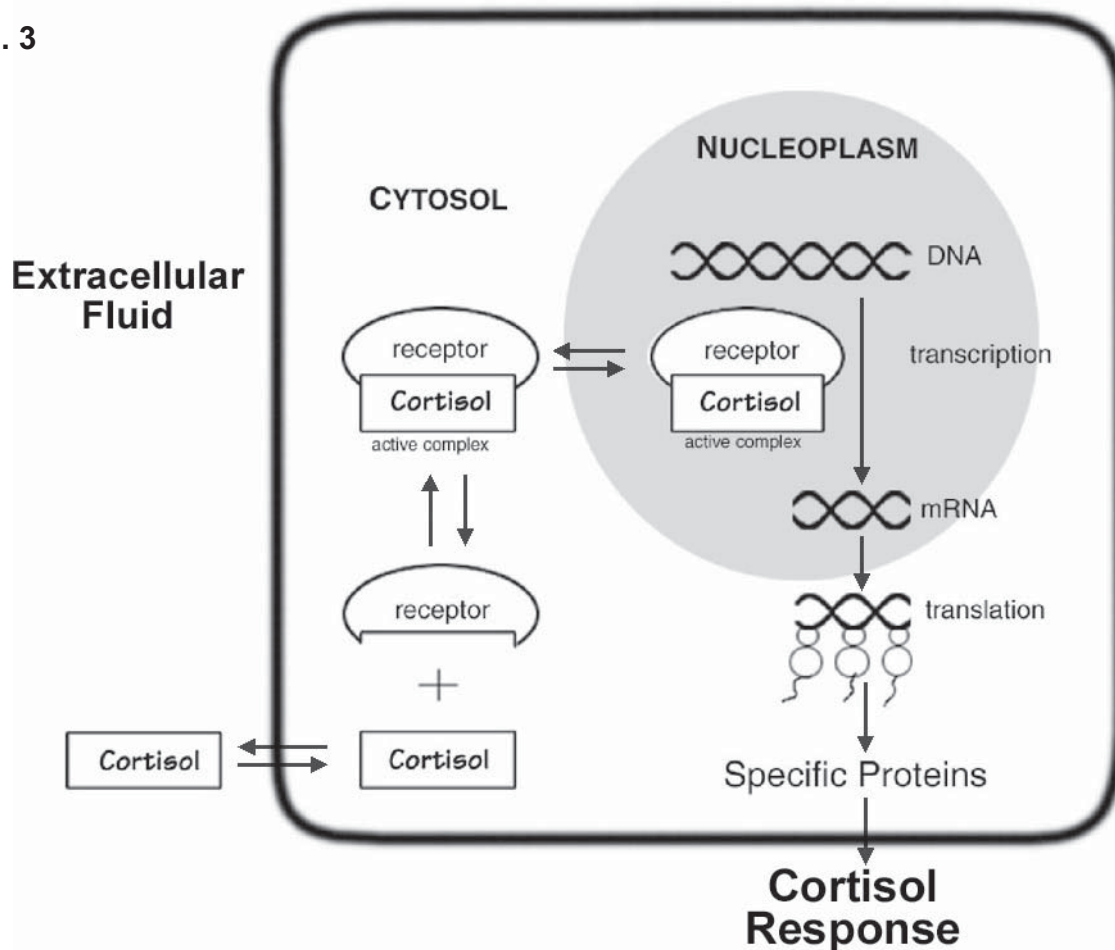
### Cortisol

The synthesis and regulation of cortisol production is shown in figure 4. Cortisol is tightly regulated by feedback mechanisms in both the hypothalamus and the pituitary glands, where the original hormonal signals trigger its production. As in other systems, the hypothalamus begins the process by secreting corticotropin-releasing factor (CRF) in response to a variety of "stressors." CRF then triggers the anterior pituitary to release adrenocorticotrophic hormone (ACTH) which increases the adrenal cortex secretion of cortisol. In turn, increasing cortisol levels slow down the production of both CRF and ACTH from their respective glands. This whole circuit is referred to as the hypothalamic-pituitary- adrenal (HPA) axis or system. Normal functioning of the HPA is known to have three attributes. First, when the system is unstressed there is a circadian rhythm of activity in the system. The rhythm consists of the highest cortisol levels shortly after awakening (7-8 a.m.) and progressively falling until they are lowest during the first several hours of sleeping ( for normal circadian rhythm of salivary cortisol see page 15). A healthy HPA should have a circadian rhythm as well as appropriate total daily secretion of cortisol. The second function of the HPA is the various feedback loops. As mentioned previously, increasing amounts of cortisol should be able to shut down ACTH and CRF production, and hence reduce the cortisol levels. Clinically appropriate challenges with corticosteroids like dexamethasone can be used to test this feedback loop. Positive tests for pituitary and adrenal cortex functions can also performed by giving patients CRF or ACTH and measuring cortisol responses. Third, and most importantly for us, is the fact that various stressors can stimulate the HPA; and many can do so in a way that overrides both the circadian and feedback controls. It is this well-known phenomenon that allows the functional testing of the HPA system, giving us a glimpse of the effects of stress (both acute and chronic) on the health of an individual.

Cortisol is best known for stimulating gluconeogenesis, and it is essential for normal glycogenolysis. Cortisol affects the heart, vasculature, blood pressure, water excretion and electrolyte balance. It mobilizes protein stores in all tissues except the liver. It mobilizes fatty acids from adipose, it is the precursor of cortisone and acts as an anti-inflammatory agent; and it is the primary hormone directing immune function. Cortisol can stimulate and inhibit gene transcription, it promotes apoptosis and it affects bone and calcium dynamics. It affects behavior, mood, neural activity and a variety of central nervous system biochemical processes. Cortisol affects the eyes, gastrointestinal tract, reproductive function and the production and clearance of other classes of hormones. The general effect of excess cortisol is usually catabolic.

Cortisol, because it is a steroid hormone, crosses the plasma membrane of cells with ease. Once in the cytoplasm, it binds to a carrier hormone and is ushered into the inner sanctum of the nucleus where it permits the transcription of DNA into an mRNA template needed for the cell to manufacture its protein products. Examples include cellular production of antibodies for the immune system, neurotransmitters for the nervous system, cellular receptors and signaling proteins and enzymes for nearly every metabolic reaction.

**Fig. 3**



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Cortisol has been called the “death hormone” because it causes catabolism in nearly every tissue of the body if released in large amounts and for prolonged periods of time. Too little cortisol, however, can also disrupt many metabolic processes and because it is considered a necessary facilitative hormone for most every cell in the body and without it we would die. The key point to remember is too much or too little cortisol will contribute to varied symptoms and chronic health disorders.

### **DHEA and Adrenal Activity**

While the importance of cortisol has been relatively unheralded, the virtues of DHEA (Dehydroepiandrosterone) have made headlines for the past several years. DHEA and its sulfated metabolite DHEA-S are hormones secreted by the adrenal cortex in response to pituitary ACTH production. DHEA-S is the most abundant circulating steroid hormone in humans and the most abundant product of the adrenal glands. As such, its measurement has been of interest, especially since reduced levels of both DHEA and DHEA-S are associated with aging. Some have tried to use DHEA levels to devise a method to gauge relative biological (rather than chronological) age. One study showed that DHEA-S levels were significantly lower in nursing home patients who required total care versus individuals of similar ages who are able to care for themselves (3). Another study revealed that DHEA-S levels were lower in men with at least one coronary stenosis (greater or equal than 50%) compared to those without a similar arterial narrowing. Levels of DHEA-S were also inversely related to the number of diseased coronary vessels (4). While the cause-effect relationship with DHEA has yet to be determined, DHEA levels may be a marker for age-related chronic conditions. Perhaps the most interesting connection is the relationship between DHEA levels and incidence of Chronic Fatigue Syndrome (CFS). Several studies have shown that individuals with CFS are more likely to have low levels of DHEA and DHEA-S (5,6). This is probably the result of overall HPA or adrenal suppression, felt as general fatigue, accompanied by immune system irregularities and sensitivities. DHEA-S (but not DHEA) levels also seems to be associated with patients suffering from depression (5).

Because DHEA-S is so abundant and has such a long half-life, it is rather easy to detect in saliva samples and does not have a noticeable diurnal cycle like cortisol or DHEA. For this reason it can be used in combination with a cortisol rhythm to detect HPA irregularities. The cortisol/DHEA-S ratio can be a valuable tool in determining the need for pregnenolone, DHEA and stress management treatments. Remember, only individuals with lower than average DHEA/DHEA-S levels should be given supplemental DHEA, as it is a sex steroid molecule.

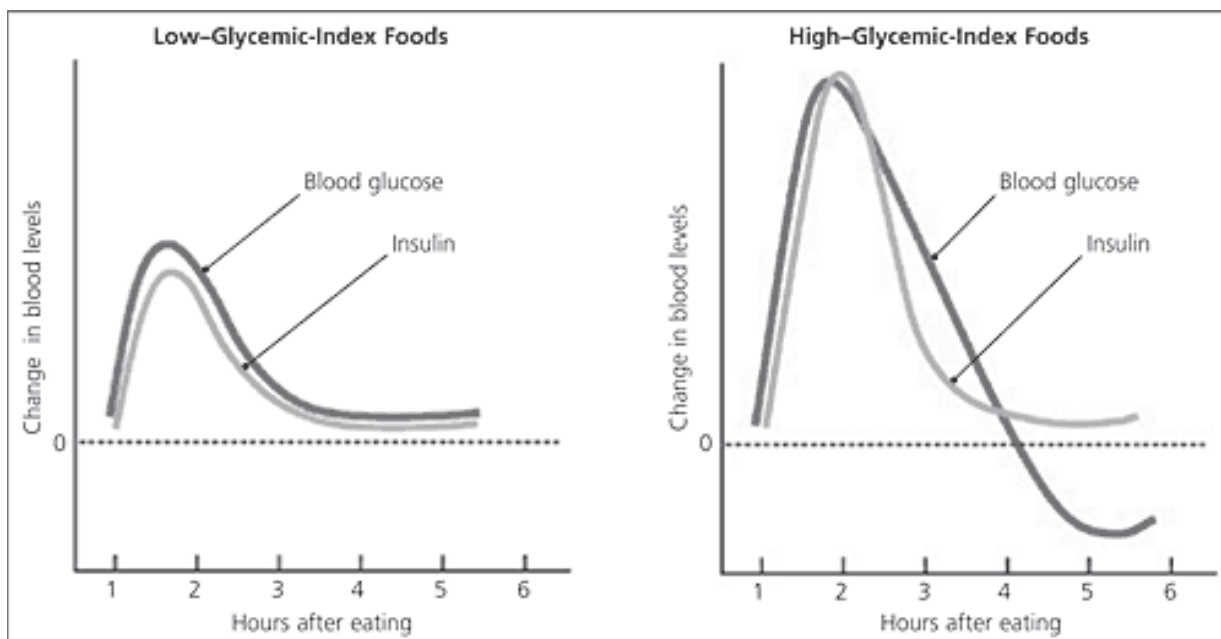
### **Specific Effects of Cortisol on tissues**

- Together with Glucagon promotes release of glycogen from liver as glucose and stimulates gluconeogenesis to raise serum levels of glucose
- Permits release of amino acids (i.e. glutamine) from muscle tissues to be converted to glucose in the liver
- Promotes uptake and deposition of glucose by adipose tissues, especially central/trunkal adipose

- Enhances osteoclastic resorption/breakdown of calcium from the bone for release into blood stream
- Inhibits vitamin D activity in the GI tract to reduce calcium absorption
- Increases neural excitability
- Initially increases antibody production in lymph glands, eventually inhibits antibody production as lymph glands atrophy from prolonged output
- Increases levels of circulating neutrophils/polymorphonuclear cells
- Decreases numbers of circulating eosinophils and lymphocytes
- Inhibits peripheral conversion of T4 to more active T3
- Promotes peripheral conversion of T4 to reverse T3 which is a competitive antagonist to T3
- Inhibits TSH release from anterior pituitary
- Blunts/inhibits Secretory IgA production throughout mucosal tissues

## The Importance of Glycemic Control

While many stressors are obvious, one of the most common and ubiquitous stressors, glycemic dysregulation, may go completely unnoticed. As mentioned previously, cortisol helps regulate blood glucose levels when they are low. **Going longer than 3-4 hours between meals will sufficiently lower blood glucose levels stimulating an ACTH response and a subsequent rise in cortisol.** As well, when individuals consume high sugar and high glycemic load meals they over-stimulate insulin production which results in radical swings of blood glucose (high to low). This will result in periods of low blood sugar, an HPA axis stressor, which will trigger cortisol production. Metabolic syndrome and insulin-resistant patients will have even more exaggerated swings in blood glucose—resulting in a constant cycle of adrenal stress.



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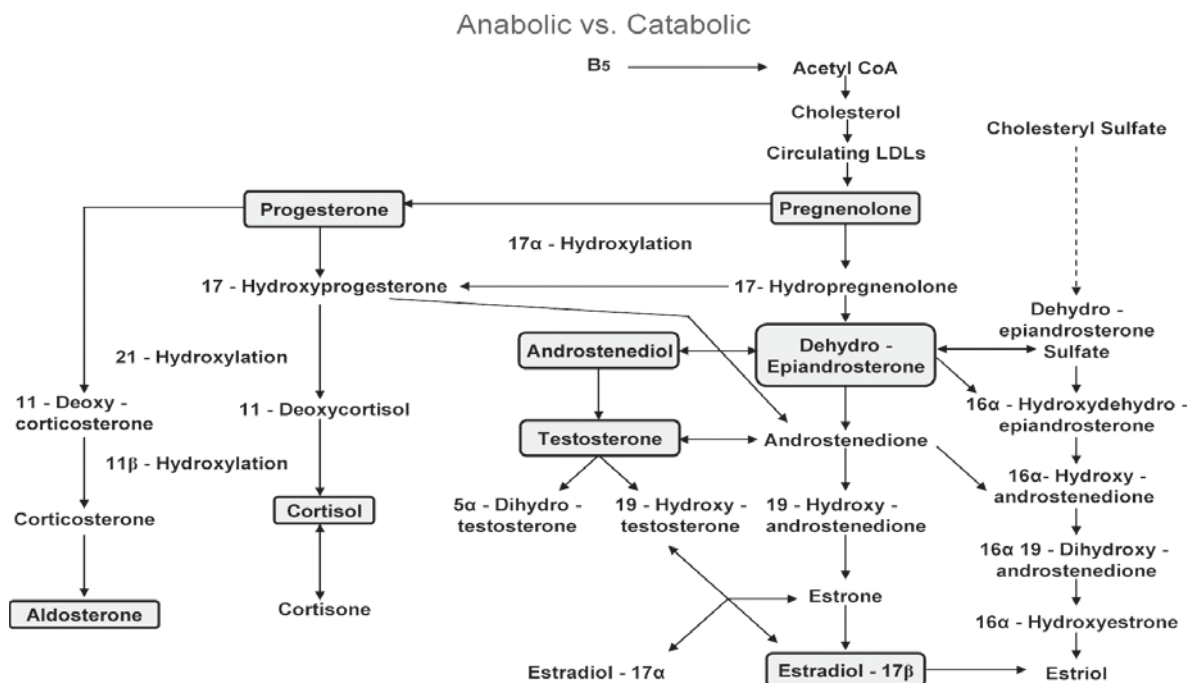
Research shows that a single meal (especially breakfast) can have a significant effect on glycemic regulation for many hours. Meals that contain protein and fat, as well as complex carbohydrates and soluble fiber will help maintain steady glucose levels, lower insulin production and prevent the need for cortisol production for glucose management. These types of meals will also result in less hunger and snacking and reduce the risk for insulin resistance.

Protocols intended to promote adrenal recovery are incomplete if they do not address the critical area of glycemic regulation. The ARK program includes Glycemic Foundation (a drink-mix, see page 53) as part of the basic package for all kits to ensure that every patient begins the process of adrenal recovery with proper glycemic regulation. It is vital that this be used along with the breakfast meal (breakfast should include protein and fat with no greater than 50% carbs) to have the most overall benefit.

## Physiological/Normal Response to Stress

Cortisol enables the body to respond to various stressors through the release of stored resources within the body – glycogen to become blood sugar, bone minerals to release calcium and magnesium, glutamine from muscles to be converted to glucose, etc. As these actions of Cortisol are catabolic and create a breakdown state the body's normal response is to follow this with a release of DHEA and other anabolic hormones to help repair the effects of the catabolism. The optimal release of DHEA, human growth hormone and other anabolic hormones is during sleep.

**Fig. 4 Steroidal Hormone Principle Pathways**

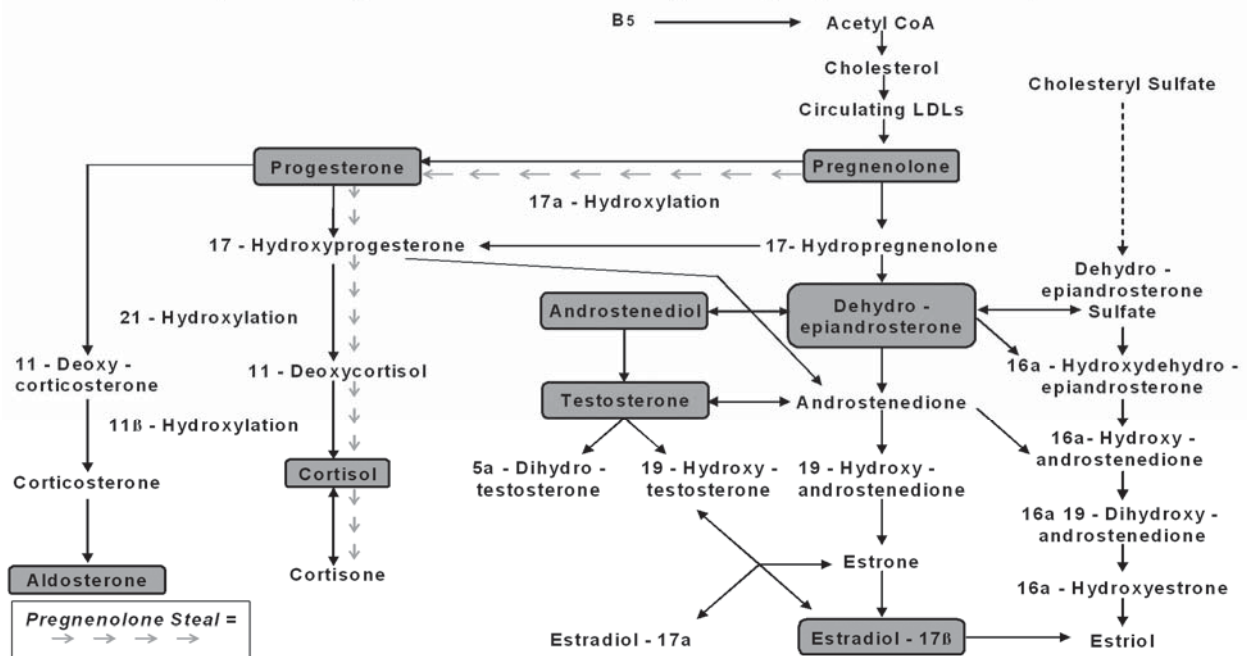


## Maladaptive Response/Pregnenolone Steal

When chronic stress demands on the body accumulate and exceed the response capability of the adrenals there is a predictable maladaptation to this prolonged stress that initially manifests as lowered DHEA release. This happens because all available precursor hormones (e.g. Pregnenolone and Progesterone) are undergoing conversion to Cortisol in an attempt to keep up with the continued demands perceived by the hypothalamus and the release of ACTH from the anterior pituitary. This maladaptation to chronic stress is referred to as Cortisol escape or Pregnenolone steal. When this drop in DHEA occurs there is insufficient repair and recovery from catabolism, accelerating the aging process.

**Fig. 5 Steroidal Hormone Principle Pathways**

(Illustrating the chronic stress response/pregnenolone steal)



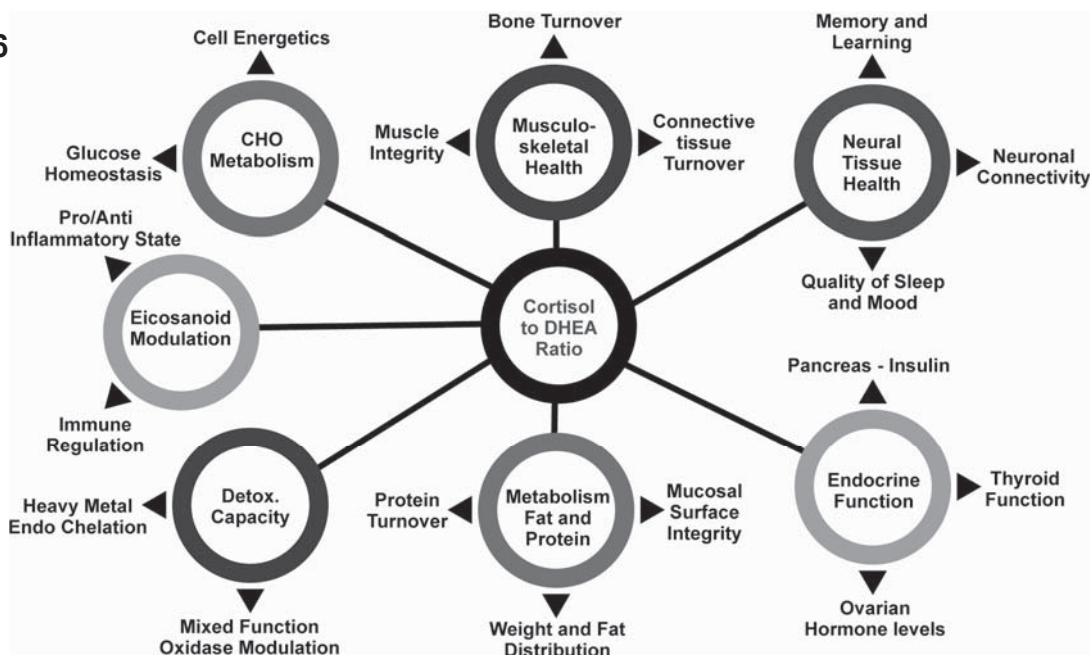
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## Symptoms/Conditions Associated with Increased Cortisol to DHEA Ratio

- Carbohydrate Metabolism:
  - Hypoglycemia
  - Chronic Fatigue – impaired ATP production
- Musculoskeletal health:
  - Osteoporosis/Osteopenia – increased bone resorption
  - Renal calculi – increased calcium oxalate stone formation
  - Muscle wasting – increased catabolic release of amino acids
  - Weakened ligamentous/cartilaginous tissues
- Neural Tissue Health:
  - Depression/Anxiety – increased turnover of neurotransmitters
  - Insomnia – sleep initiation & maintenance
  - Mood swings/Irritability – increased neural excitability
  - Poor learning and short term memory
- Eicosanoid Modulation:
  - Chronic Inflammation – poor control of pro-inflammatory cytokines, prostaglandins, eicosanoids
  - Pain Syndromes – Fibromyalgia, headaches, arthritis, polymyalgia etc.
  - Poor wound healing
  - Easy bruising/vascular fragility
  - Immune dysfunction – impaired lymphocyte activity
- Liver Detoxification:
  - Heavy Metal Toxicity – reduced endochelation
  - Poor Antioxidant control – reduced methylation and sulfation reactions
- Endocrine Function:
  - Hypothyroidism – lowered TSH and T4 to T3 conversion secondary to prolonged catabolism
  - Premenstrual Syndrome – reduced contribution of progesterone from adrenals
  - Infertility – luteal phase deficit of progesterone
  - Severe menopause
  - Insulin Resistance – poor insulin receptor sensitivity
- Metabolism of Fat and Protein:
  - Trunkal obesity – increased uptake of glucose in central adipose cells
  - Increased Mucosal Permeability – weakened mucosal tissue integrity

Fig. 6



## Assessing Patients' Response

### Adrenal Stress Profile: ARK #201/ARK #205\* Adrenal Cortisol Rhythm and DHEA-S Average

Note: *The ARK program is best suited for programs identifying 3 stages of adrenal stress (acute adrenal dysfunction, adrenal fatigue, adrenal exhaustion) utilizing salivary hormone testing and questionnaires (see appendix for sample questionnaires). Other methods of determining cortisol output and adrenal status such as blood or urine may be used to determine the three stages, but are not explained in this road map. The reference ranges outlined in the ARK are derived through historical data collected by BioHealth Diagnostics Laboratory. Other labs may use slightly different reference ranges.*

#### Overview

The Adrenal Stress Profile is a salivary test easily performed at home or at work, and mailed directly to the lab. Four saliva samples are taken throughout the course of a patient's typical day so that the cortisol circadian rhythm can be determined. Two of these samples provide an average DHEA-S value. This profile, along with the questionnaire provided (see appendix) and the patient history, can help identify the stage of adrenal exhaustion and give an accurate assessment of adrenal dysfunction for each patient.

#### Cortisol Rhythm (4 Timed Samples)

The salivary free fraction of the adrenal cortisol output is reported because of its high clinical correlation with both serum free fraction testing and with patient's symptoms. The sum of four individual cortisol levels is taken at specified intervals throughout the day: in the morning between 6-8 am, near noon between 12-1 pm, in the late afternoon between 4-5 pm, and at nighttime between 10 pm-12 am. The normal reference range used for the ARK 201/205 assessment includes a sum of these four cortisol readings between 23-42 nM, with the ideal being 34-36 nM. (Note: reference ranges used by other labs may be slightly different or utilize different units of measurement).

#### DHEA-S Average (Value of 2 samples)

DHEA is the major precursor of testosterone and the estrogens. The more active, sulfate form of DHEA is DHEA-S, which provides a more reliable measure of DHEA levels. We report the average of two DHEA-S values, taken between 12-1 pm and between 4-5 pm. The normal DHEA-S level is 2.0-10.0 ng/ml and the ideal is 7.0-8.0 ng/ml. DHEA is an important modulator of many physiological processes. It promotes the growth and repair of protein tissue, especially muscle, and acts as a counter-regulatory agent to cortisol, negating many of the harmful effects of excess cortisol. Over extended periods of an increased demand for cortisol, DHEA levels decline, and DHEA is then no longer able to counter-regulate the negative effects of excess cortisol. Depressed DHEA levels serve as an early warning of potential adrenal exhaustion.

*\* For more information on choosing the correct test for your patient, please see our FAQ page 60 and the questionnaire in the appendix.*

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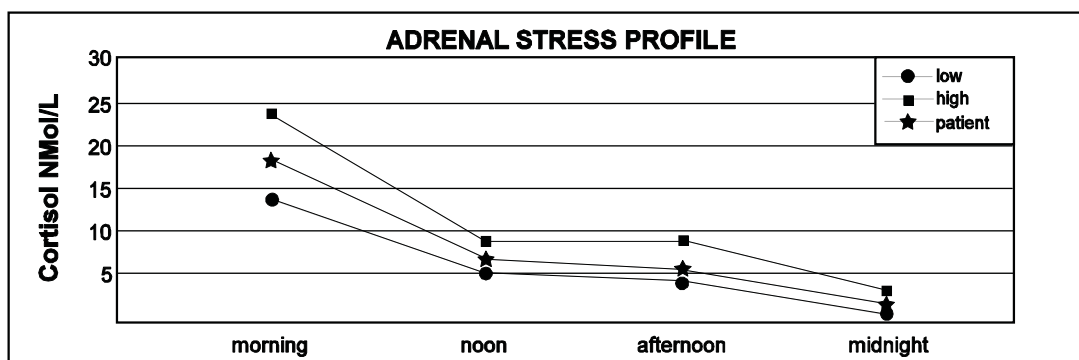
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## Adrenal Stress Profile – Normal Sample

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	18.2		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)	7.0		nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)	5.1		nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	2.0		nM	1.0 - 3.0
CORTISOL SUM	32.3		nM	23.0 - 42.0
DHEA-S AVERAGE	6.2		ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO	5.2		RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	18.2	7	5.1	2

## **Clinical Considerations: Adrenal Stress Profile (ARK 201) Adrenal profile for ARK 205\***

- The test results listed under the various stages of adrenal exhaustion are not intended to be representative of all possible test results - however, they do provide pertinent examples for interpretation and can help guide the practitioner in choosing effective protocols for therapy.
- Results in “Acute Adrenal Dysfunction” are seen less often since people in this stage generally are still experiencing significant stress with a stress response that is somewhat able to respond corresponding to fewer symptoms or health complaints. These are not typical patients that are presenting with complaints related to adrenal exhaustion. However, patients with acute stress that persists will inevitably reach the point of adrenal exhaustion. How long it takes to become exhausted is a function of genetics, diet, stress management, sleep and exercise habits.
- The adrenal protocols listed in this guide do not take into consideration patients on thyroid medications, as improving adrenal function (augmenting DHEA and pregnenolone) can significantly improve thyroid function, thereby reducing the amount of thyroid medication necessary. Given this possibility it is suggested that any patient on thyroid medication should be closely monitored and lower dosages of pregnenolone and DHEA should be initially considered.
- The variation in protocols for females: women generally need less DHEA than men. The suggested protocols are given generically and include a standard DHEA dose for men. Consideration should be made to reduce or eliminate the dose of DHEA for women with high levels of estrogen or women taking estrogen therapies.

*It is recommended that practitioners consult with the ARK technical and clinical support physicians if there are any questions regarding these notes, the interpretation of tests or the delivery of protocols. Call to set up a complimentary appointment.  
800-332-2351*

*\* For more information on choosing the correct test for your patient,  
please see our FAQ page 60, and the questionnaire in the appendix*

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## “Stage 1” Acute Adrenal Dysfunction: Mechanism of Action An Initial Increase in Cortisol Output

### Distinguishing features:

- (↑) anterior pituitary output of ACTH
- (↑) adrenocortical stimulation
- (↑) cortisol output
- (↑) probability of pregnenolone steal
- (↑) probability of (↓) DHEA

Acute Adrenal dysfunction is defined as a prolonged, increased excitatory stimulus to the adrenals having resulted in a prolonged, increased cortisol output, usually with a corresponding prolonged decrease in DHEA. In the hypothalamic-pituitary-adrenal control loop (HPA axis), an increase in ACTH output from the pituitary gland stimulates the adrenal glands. The level of cortisol is regulated through the HPA negative feedback. Continued demand for increased cortisol production necessitates ongoing ACTH release by the pituitary, but the adrenals can eventually experience difficulty in meeting the demand. This difficulty begins during the first stage of adrenal exhaustion.

### Stage 1

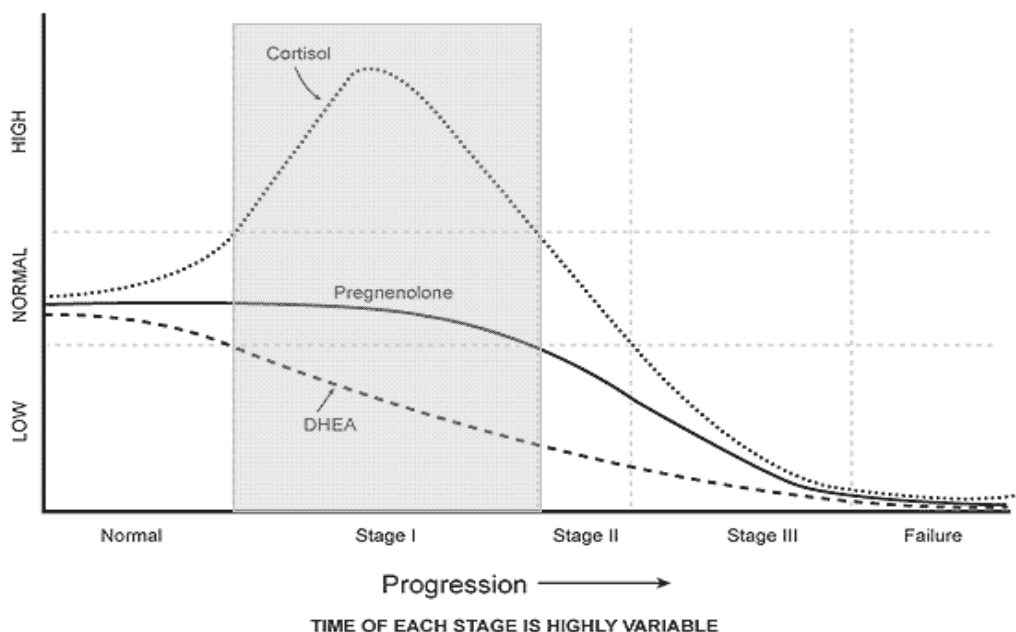
At least  
One  
Cortisol is  
High

Total  
Cortisol  
Sum is  
High

DHEA is  
Borderline  
Low, Low,  
or Normal

Eventually, other pathways must compensate to facilitate the production of sufficient cortisol. One such compensation is shunting or “stealing” of pregnenolone from the DHEA/sex hormone pathway to the progesterone/cortisol pathway. In this steal, the pathway from progesterone to cortisol becomes preferential over the pathway from DHEA to the sex hormones. There is consequently a decrease in DHEA and its metabolites, which include testosterone and the estrogens. Progesterone either remains normal or decreases, and cortisol increases. Despite elevated cortisol, pregnenolone steal reliably indicates that chronic stress has begun to exceed the body’s ability to respond.

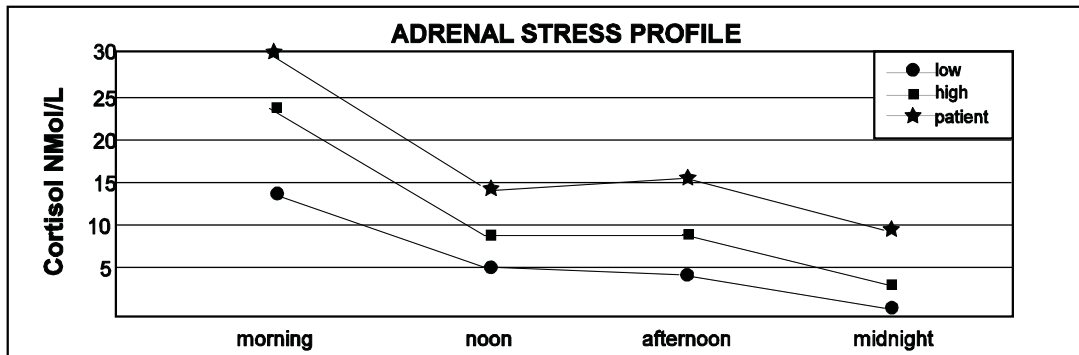
**Fig. 7** Progression of Stages of Adrenal Exhaustion



## Sample Test Result 1-1 /Stage 1 - Acute Adrenal Dysfunction

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)		30.0	nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)		14.6	nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		15.4	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)		9.2	nM	1.0 - 3.0
CORTISOL SUM		69.2	nM	23.0 - 42.0
DHEA-S AVERAGE	3.0		ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		23.1	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	30	14.6	15.4	9.2

### Stage 1 Profile

- At least One Cortisol is High
- Total Cortisol Sum is High
- DHEA is Borderline Low, Low, or Normal

*a Balanced Life:*

*Restored... Renewed... Revitalized...*

## Suggested Protocol - Acute Adrenal Dysfunction

↳ For Test Result 1-1

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak 2 packets per day
- Ortho Biotic 1 capsule daily

### Suggested Protocol for Test 1-1

- Glycemic Foundation: 2 scoops with breakfast
- Tranquil Moment: 1 cup tea each mid-afternoon
- Pregnenolone\*: 1 tablet – held under tongue 3 times daily after meals.
- DHEA\*: 1 tablet – held under tongue 2-3 times daily after meals.
- AdreneVive: 2 capsules with breakfast; 2 capsules with lunch.

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)
- Phosphatidylserine (1 capsule ½ hour before breakfast and dinner)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations, contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

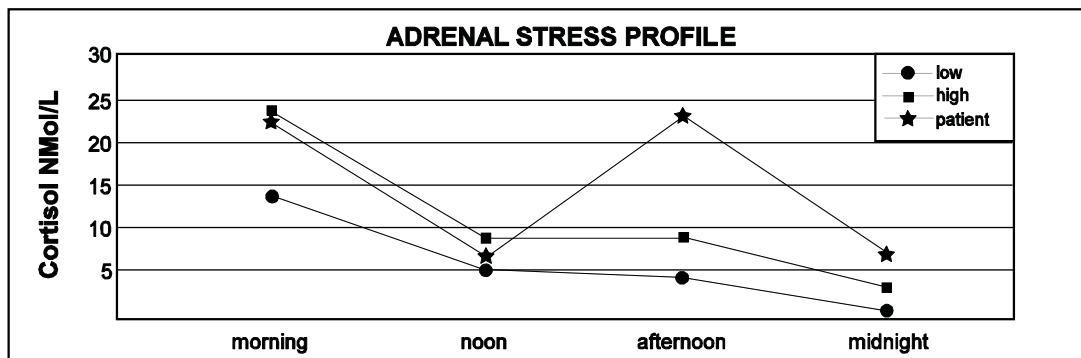
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- AdreneVive contains phosphatidylserine to blunt the secretion of ACTH and reduce cortisol output with the addition of adaptagens to increase the body's ability to resist stress and exert a balancing effect on various systems of the body. In addition, theanine is added for relaxation and skullcap to support immune function.

## Sample Test Result 1-2/ Stage 1 Acute Adrenal Dysfunction

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	22.4		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)	7.0		nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		23.0	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)		7.1	nM	1.0 - 3.0
CORTISOL SUM		59.5	nM	23.0 - 42.0
DHEA-S AVERAGE	2.0		ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		29.75	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	22.4	7	23	7.1

### Stage 1 Profile

- At least One Cortisol is High
- Total Cortisol Sum is High
- DHEA is Borderline Low, Low, or Normal

*a Balanced Life:*

*Restored... Renewed... Revitalized...*

## Suggested Protocols –Acute Adrenal Dysfunction

⇐ For Test Result 1-2

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1      capsule daily

### Suggested Protocol for Test 1-2

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals.
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals.
- AdreneVive:      1-2 capsules with breakfast; 2 capsules with lunch.

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

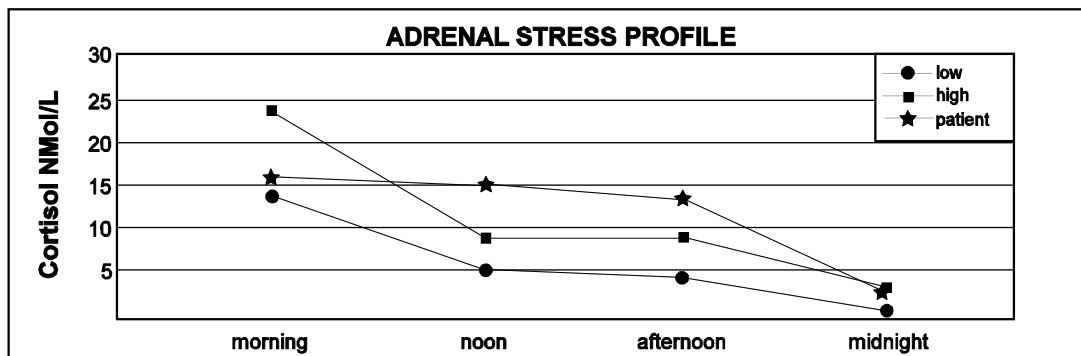
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- AdreneVive contains phosphatidylserine to blunt the secretion of ACTH and reduce cortisol output with the addition of adaptagens to increase the body's ability to resist stress and exert a balancing effect on various systems of the body. In addition theanine is added for relaxation and skullcap to support immune function.

## Sample Test Result 1-3/ Stage 1 - Acute Adrenal Dysfunction

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

		NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201					
MORNING	(6:00 - 8:00 AM)	16.0		nM	13.0 - 24.0
NOON	(12:00 - 1:00 PM)		15.0	nM	5.0 - 8.0
AFTERNOON	(4:00 - 5:00 PM)		13.0	nM	4.0 - 7.0
NIGHTTIME	(10:00 PM - 12:00 AM)	2.7		nM	1.0 - 3.0
CORTISOL SUM			46.7	nM	23.0 - 42.0
DHEA-S AVERAGE			1.3	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO			35.9	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	16	15	13	2.7

### Stage 1 Profile

- At least One Cortisol is High
- Total Cortisol Sum is High
- DHEA is Borderline Low, Low, or Normal

*a Balanced Life:*

*Restored... Renewed... Revitalized...*

## Suggested Protocols – Acute Adrenal Dysfunction

⇐ For Test Result 1-3

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1      capsule daily

### Suggested Protocol for Test 1-3

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals.
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals.
- AdreneVive:      1-2 capsules with breakfast; 2 capsules with lunch.

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- AdreneVive contains phosphatidylserine to blunt the secretion of ACTH and reduce cortisol output with the addition of adaptagens to increase the body's ability to resist stress and exert a balancing effect on various systems of the body. In addition theanine is added for relaxation and skullcap to support immune function.

## Stage 2- Adrenal Fatigue: Mechanism of Action

### The Transition from Increased to Decreased Cortisol Output

Distinguishing features:

- (↑) anterior pituitary output of ACTH
- (↑) adrenocortical stimulation
- normal total cortisol output
- low or borderline-low morning, noon, or afternoon cortisol level
- normal nighttime cortisol level
- (↑) probability of pregnenolone steal
- (↑) probability of (↓) DHEA

Adrenal Fatigue is a transitional phase. It signifies a continuing decline in cortisol output from levels above normal to those below normal, although ACTH stimulation remains high or even increases. There is a gradual change from increased to decreased cortisol output due to a decreasing response of the adrenal glands to protracted ACTH stimulation. Any one or more of the morning, noon or afternoon cortisol values is low or borderline-low, but the nighttime cortisol level is usually normal. The decreasing cortisol output is a marker of mid-stage adrenal exhaustion. In this stage, the sum of the four cortisol levels is normal. Pregnenolone steal from the DHEA/sex hormone pathway to the progesterone/cortisol pathway can assist in maintaining normal overall cortisol levels at the continued expense of DHEA. DHEA usually remains low or borderline-low a reliable indicator of pregnenolone steal and that demands from stress are greater than the body's ability to respond.

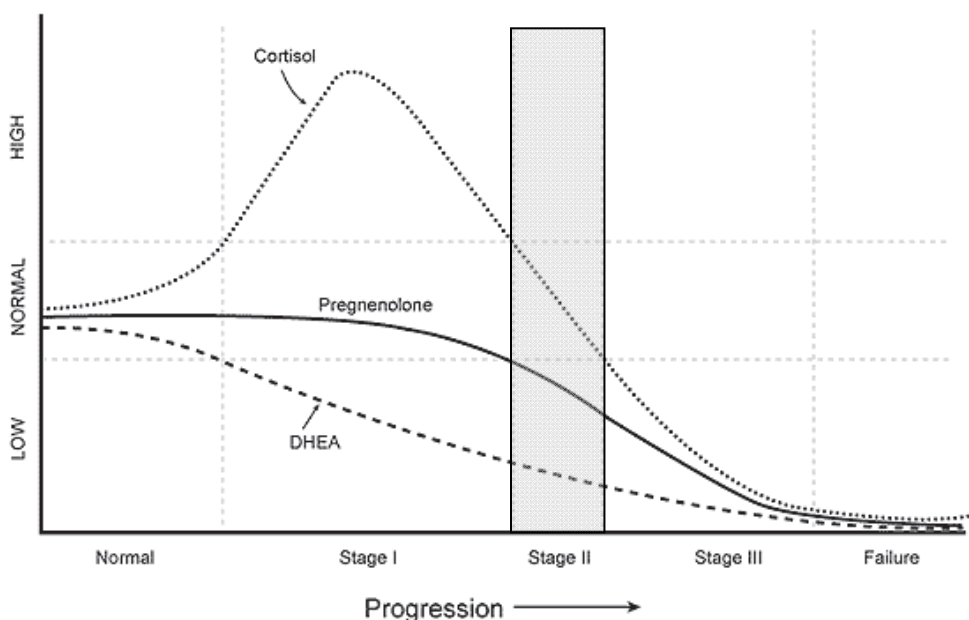
#### Stage 2

AM, Noon  
or  
Afternoon  
Cortisols  
are Low or  
Borderline  
Low

Total  
Cortisol  
Sum is  
Normal

DHEA  
Borderline  
Low or Low

Fig. 8 Progression of Stages of Adrenal Exhaustion

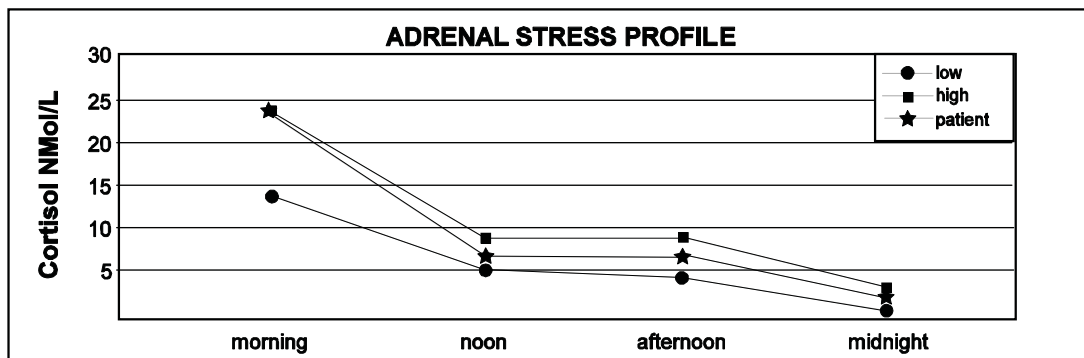


TIME OF EACH STAGE IS HIGHLY VARIABLE

## Sample Test Result -Stage 2 Adrenal Fatigue

\* \* \* F U N C T I O N A L A D R E N A L S T R E S S P R O F I L E \* \* \*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	24.0		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)	7.0		nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)	7.0		nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	2.5		nM	1.0 - 3.0
CORTISOL SUM	40.5		nM	23.0 - 42.0
DHEA-S AVERAGE	2.9		ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		14.0	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	24	7	7	2.5

### Stage 2 Profile

- AM, Noon or Afternoon Cortisols are Low or Borderline Low
- Total Cortisol Sum is Normal
- DHEA Borderline Low or Low

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## Suggested Protocols –Adrenal Fatigue

↳ For Test Result 2-1

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1      capsule daily

### Suggested Protocol for Test 2-1

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals.
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals.
- Adren-All/Adapten-All:      2 capsules with breakfast.

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

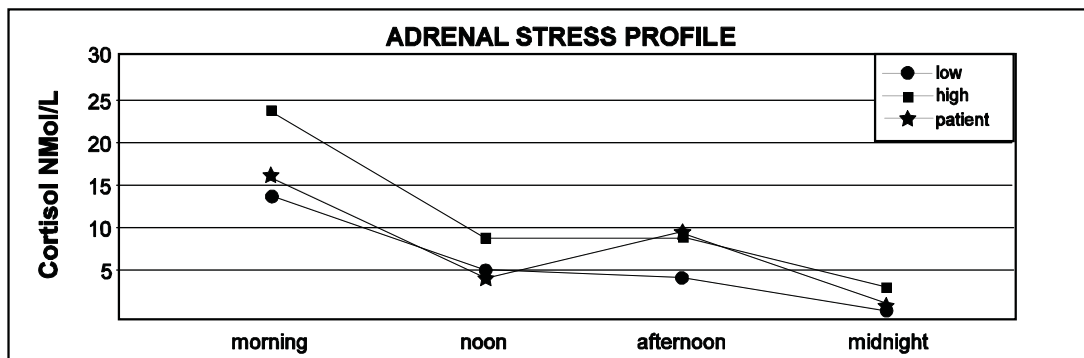
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptagens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.

## Sample Test Result /Stage 2 Adrenal Fatigue

\* \* \* F U N C T I O N A L A D R E N A L S T R E S S P R O F I L E \* \* \*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	16.5		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)		4.0	nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		9.0	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	1.4		nM	1.0 - 3.0
CORTISOL SUM	30.9		nM	23.0 - 42.0
DHEA-S AVERAGE		1.7	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		18.2	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	16.5	4	9	1.4

### Stage 2 Profile

- AM, Noon or Afternoon Cortisols are Low or Borderline Low
- Total Cortisol Sum is Normal
- DHEA Borderline Low or Low

*a Balanced Life:*

*Restored... Renewed... Revitalized...*

## Suggested Protocols –Adrenal Fatigue

↳ For Test Result 2-2

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1      capsule daily

### Suggested Protocol for Test 2-2

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Adren-All/Adapten-All:      2 capsules with breakfast.
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals.
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals.
- Licorice Root      10 drops mid-morning

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

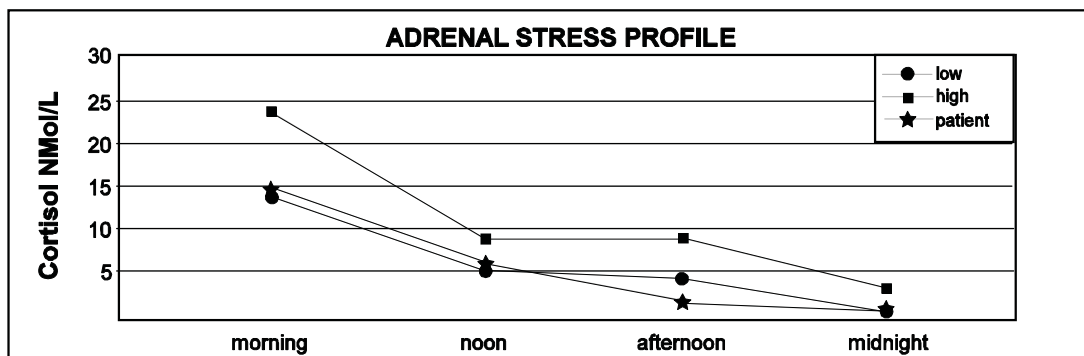
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptagens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- Licorice increases the half life of endogenous cortisol (saves) and improves blood sugar control.

## Sample Test Result - Stage 2 Adrenal Fatigue

\* \* \* F U N C T I O N A L A D R E N A L S T R E S S P R O F I L E \* \* \*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	14.2		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)	6.4		nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		2.0	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	1.0		nM	1.0 - 3.0
CORTISOL SUM	23.6		nM	23.0 - 42.0
DHEA-S AVERAGE		1.0	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		23.6	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	14.2	6.4	2	1

### Stage 2 Profile

- AM, Noon or Afternoon Cortisols are Low or Borderline Low
- Total Cortisol Sum is Normal
- DHEA Borderline Low or Low

*a Balanced Life:*

*Restored... Renewed... Revitalized...*

## Suggested Protocols –Adrenal Fatigue

↳ For Test Result 2-3

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak 2 packets per day
- Ortho Biotic 1 capsule daily

### Suggested Protocol for Test 2-3

- Glycemic Foundation: 2 scoops with breakfast
- Tranquil Moment: 1 cup tea each mid-afternoon
- Adren-All/Adapten-All 2 capsules with breakfast or with lunch
- Pregnenolone\*: 1 tablet – held under tongue 3 times daily after meals.
- DHEA\*: 1 tablet – held under tongue 2-3 times daily after meals.
- Licorice Root Extract: 10 drops mid-afternoon

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptagens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- Licorice increases the half life of endogenous cortisol (spares) and improves blood sugar control.

## Stage 3 Adrenal Exhaustion: Mechanism of Action

### The Advanced Stage with Decreased Cortisol Output

Distinguishing features:

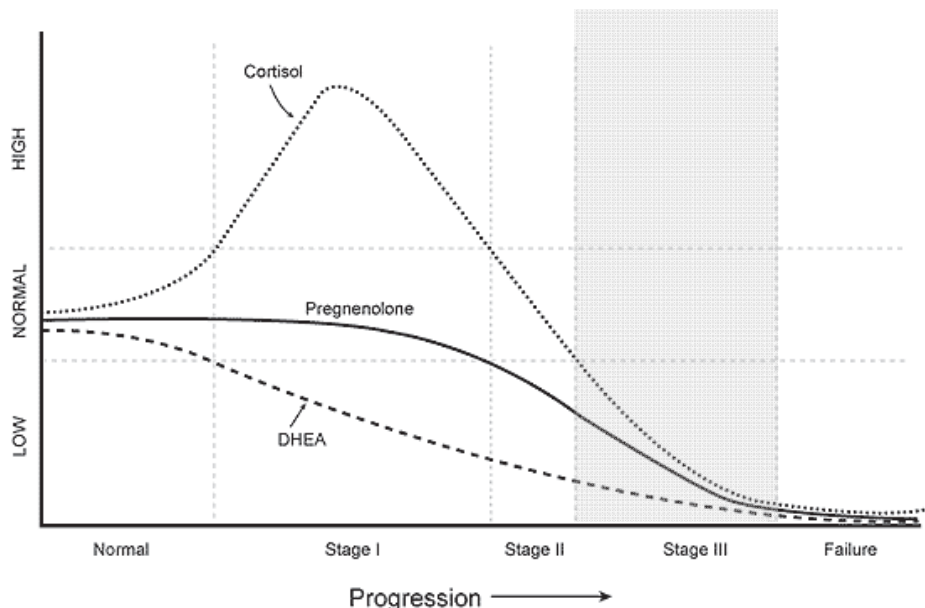
- (↑) anterior pituitary output of ACTH
- (↑) adrenocortical stimulation
- (↓) total cortisol output
- (↑) probability of (↓) nighttime cortisol level
- (↑) probability of pregnenolone steal
- (↑) probability of (↓) DHEA

Stage 3 is a severe and late stage of adrenal exhaustion. It is marked by the failure of the adrenals to produce enough cortisol to reach even normal levels in response to continued, increased ACTH stimulation. The sum of the four cortisol levels is below normal and DHEA is usually low or borderline-low. Endocrine and autonomic pathways, through endogenous and/or exogenous stress, have been conditioned by a complex of stimuli to respond beyond normal physiological ranges. This conditioning ultimately results in adrenal gland inability to produce the amount of cortisol demanded by the degree of stimulation. The result is a hypothalamic-pituitary-adrenal axis “crash,” in which essential neuroendocrine feedback loops are endogenously unable to return the system to homeostasis. In such a case there is often a decreased nighttime cortisol, which is a marker of high adrenal exhaustion.

A wide variety of seemingly unrelated symptoms usually appears; a situation which reflects the global nature of the dysfunction. Severe imbalances in other hormone systems are to be expected. Subclinical disorders are common, indicating the insidiousness of advanced adrenal exhaustion. Without intervention adrenal failure is a possibility, as are cardiovascular, thyroid, and GI complications.

<b>Stage 3</b>
<b>Most Cortisols are Low or Borderline Low</b>
<b>Total Cortisol Low</b>
<b>DHEA Borderline Low or Low</b>

**Fig. 9** Progression of Stages of Adrenal Exhaustion



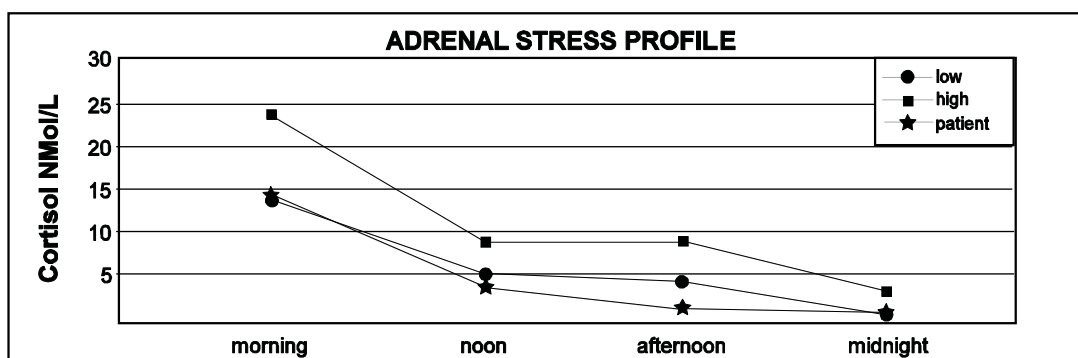
TIME OF EACH STAGE IS HIGHLY VARIABLE

**ARIK**  
adrenal recovery kit

## Sample Test Result/ Stage 3 - Adrenal Exhaustion

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)	13.2		nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)		3.3	nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		2.3	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	1.0		nM	1.0 - 3.0
CORTISOL SUM		19.8	nM	23.0 - 42.0
DHEA-S AVERAGE		1.6	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		12.4	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	13.2	3.3	2.3	1

### Stage 3 Profile

- Most Cortisols are Low or Borderline Low
- Total Cortisol Low
- DHEA Borderline Low or Low

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## Suggested Protocols –Adrenal Exhaustion

↳ For Test Result 3-1

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1 capsule daily

### Suggested Protocol for Test 3-1

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Adren-All/Adapten-All:      2 capsules with breakfast, 2 capsules with lunch
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals
- Licorice Root Extract:      10 drops upon arising, mid-morning, and  
mid-afternoon

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

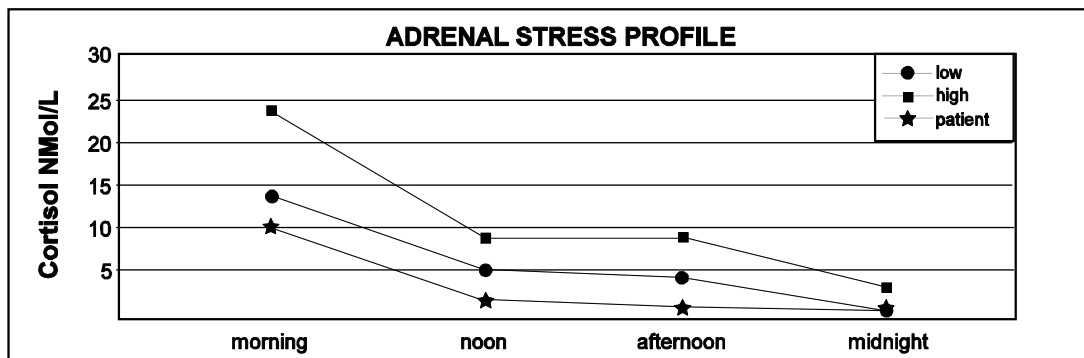
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptagens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- Licorice increases the half life of endogenous cortisol (spares) and improves blood sugar control.

## Sample Test Result 3-2/ Stage 3 - Adrenal Exhaustion

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)		10.0	nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)		2.0	nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		1.2	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)	1.0		nM	1.0 - 3.0
CORTISOL SUM		14.2	nM	23.0 - 42.0
DHEA-S AVERAGE		1.0	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO		14.2	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	10	2	1.2	1

### Stage 3 Profile

- Most Cortisols are Low or Borderline Low
- Total Cortisol Low
- DHEA Borderline Low or Low

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## Suggested Protocols –Adrenal Exhaustion

↳ For Test Result 3-2

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1 capsule daily

### Suggested Protocol for Test 3-2

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Adren-All/Adapten-All:      2 capsules with breakfast, 2 capsules with lunch
- Pregnenolone\*:      1 tablet – held under tongue 3 times daily after meals
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals
- Licorice Root Extract:      10 drops upon arising, mid-morning and mid-afternoon

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK technical support to schedule a complimentary consultation with a physician consultant. 800-332-2351
- **Advanced Exhaustion** (cortisol sum  $\leq$ 15) should be retested in 4-6 weeks. Also consider low dose hydrocortisone (i.e. Cortef)..
- **Licorice Root Extract** helps to spare cortisol from conjugation in the liver and allows additional passes through systemic circulation.

**→ Unless otherwise stated, all protocols should be followed for a minimum of 12 weeks.**

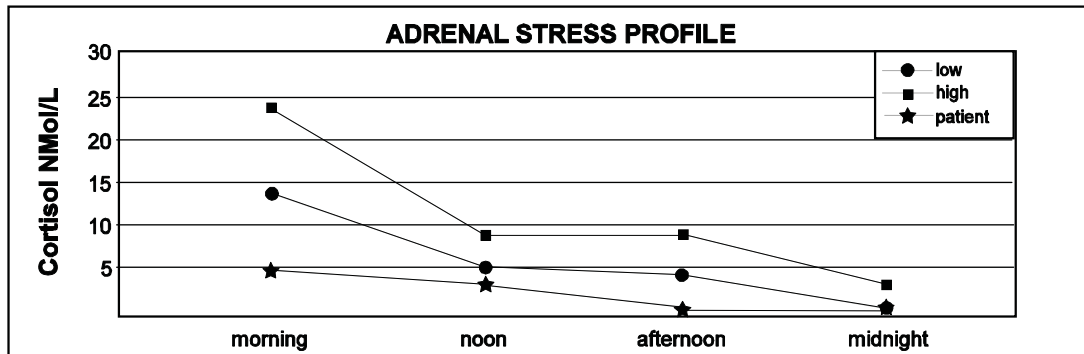
### **Important Note:**

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptagens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)

## Sample Test Result 3-3/ Stage 3 - Adrenal Exhaustion

\*\*\* FUNCTIONAL ADRENAL STRESS PROFILE \*\*\*

	NORMAL	ABNORMAL	UNITS	NORMAL RANGE
BHD #201				
MORNING (6:00 - 8:00 AM)		4.8	nM	13.0 - 24.0
NOON (12:00 - 1:00 PM)		3.0	nM	5.0 - 8.0
AFTERNOON (4:00 - 5:00 PM)		1.0	nM	4.0 - 7.0
NIGHTTIME (10:00 PM - 12:00 AM)		1.0	nM	1.0 - 3.0
CORTISOL SUM				
		9.8	nM	23.0 - 42.0
DHEA-S AVERAGE				
		.04	ng/ml	2.0 - 10.0
TOTAL CORTISOL/DHEA-S RATIO				
		245.0	RATIO	5.0 - 6.0



	morning	noon	afternoon	midnight
low	13	5	4	1
high	24	8	7	3
patient	4.8	3	1	1

### Stage 3 Profile

- Most Cortisols are Low or Borderline Low
- Total Cortisol Low
- DHEA Borderline Low or Low

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## Suggested Protocols –Adrenal Exhaustion

↳ For Test Result 3-3

### Basic Supplement Suggestions

- Alpha Base Foundation or Ultimate Pak      2 packets per day
- Ortho Biotic      1 capsule daily

### Suggested Protocol for Test 3-3

- Glycemic Foundation:      2 scoops with breakfast
- Tranquil Moment:      1 cup tea each mid-afternoon
- Adren-All/Adapten-All:      2 capsules with breakfast, 2 capsules with lunch
- Pregnenolone\*:      2 tablet – held under tongue 3 times daily after meals
- DHEA\*:      1 tablet – held under tongue 2-3 times daily after meals
- Licorice Root Extract:      10 drops upon arising, mid-morning, and mid-afternoon

\*Pregnenolone and DHEA dosages are general guidelines and may be increased or decreased subject to clinical indicators (DHEA levels and cortisol to DHEA ratios) and patient response. See clinical considerations on page 16.

### Additional Supplementation Suggestions

- Natural ZZZs if needed (2 capsules, 1 hour before desired sleep time)
- Ortho B-Complex (1-2 capsules per day)
- Reacted Multimin (2-4 capsules at bedtime)

### Additional Considerations

- *ARK Patient Guide* for lifestyle stress assessment and management.
- For suggested follow-up testing guidelines and clinical considerations contact ARK clinical support to schedule a complimentary consultation with a physician consultant. 800-332-2351
- **Advanced Exhaustion** (cortisol sum  $\leq$ 15) should be retested in 4-6 weeks. Also consider low dose hydrocortisone (i.e. Cortef)..
- **Licorice Root Extract** helps to spare cortisol from conjugation in the liver and allows additional passes through systemic circulation.

### Important Note

- Glycemic Foundation improves blood sugar control and is the foundation for adrenal recovery (**Be sure to start patient at 1 scoop for the first week as the beneficial prebiotic fibers can cause mild flatulence and bloating until the GI tract adjusts.**)
- Tranquil Moment tea is a lifestyle modification encouraging the patient to take a break in the afternoon of every day. It is necessary to reinforce the need to reduce stress.
- Adapten-All/Adren-All contain vitamins that support the health of the adrenals, with the addition of adaptogens to increase the bodies ability to resist stress and exert a balancing effect on various systems of the body. In addition licorice to increase the half life of endogenous cortisol.
- Pregnenolone is the precursor to all of the corticosteroids. (Be sure to have your patient hold it under the tongue.)
- DHEA is important as a regulating and precursor hormone. (Be sure to have your patient hold it under the tongue.)
- Licorice increases the half life of endogenous cortisol (spares) and improves blood sugar control.

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## ARK 205 Testing Administration and Interpretation

The ARK 205 test is instrumental in women, both pre-menopausal and post menopausal, as well as men of all ages. In premenopausal women it is necessary to know when during the cycle the patient collected her sample for best interpretation of E2, E3, and Progesterone. Reference ranges vary depending on collection days, i.e. follicular phase, mid-cycle, and luteal phase.

To determine endogenous production of hormones it is necessary to discontinue any hormone therapy prior to test collection. The length of time the patient should be off therapy prior to testing will depend on the delivery system of the hormone therapy. For sublingual therapies discontinue for 3-5 days. For oral/swallowed doses wait 7-10 days before testing and for patches and creams it is suggested to wait 21-28 days. Patients taking creams for prolonged therapy may want to consider initial testing as soon as therapy is discontinued to assess accumulated buildup of hormone followed by periodical retesting to monitor the “wash out” of hormone over the next several months. It can take a full year or more for heavy buildup of some hormones to wash out.

If the goal of testing is to monitor the effects of hormone therapy, collect the test samples concurrent with therapy administration. Consider temporary conversion of sublingual delivery to oral delivery in anticipation of salivary collections.

When deciding when to collect samples, consider that luteal phase deficits in progesterone are most easily seen during the midpoint of the luteal phase. For women with 26-30 day cycles the optimal time to test is day 18-21. If the last menstrual period is not known, consider a pregnancy test and collect basal body temps for one month. This should reveal a temperature spike of .5-1.0 degree on the day of ovulation. Once the day of ovulation is identified the test collection should follow 5-7 days after. If testing to discern hormonal contribution of other periodic symptoms such as migraines or cramping it is best to test during days of symptom occurrence.

In post menopausal women, including cases of hysterectomy induced menopause, initial testing can be collected any time. Subsequent testing should be collected near the same time each month.

**Estradiol (E2)** is the most potent of the three estrogens yielding the strongest trophic effects on tissue receptors. Prolonged and excessive stimulation of estrogen receptors can lead to unwanted proliferation of breast and uterine tissue. This proliferation can contribute to lesions such as: breast cysts, endometrial hyperplasia and neoplastic changes. Elevated levels of E2 can also be associated with migraine headaches. Low estrogen levels can be correlated with symptoms such as low energy, infertility, vaginal dryness, low libido.

**Estriol (E3)** is considered the most abundant of the three estrogens but exerts lesser effects on tissue receptors than does E2.

**Progesterone** is a key intermediate between the conversion of Pregnenolone to Cortisol/Cortisone and the adrenal cortex can supply up to 30% of a cycling woman's total Progesterone needs. But this is not the case when a woman is in pregnenolone steal and Progesterone is being pulled to Cortisol/Cortisone in an attempt to respond to chronic adrenal stress. Low progesterone is a common finding and correlates with PMS symptoms, infertility,

anxiety, insomnia, fibrocystic breast disease, uterine fibroids and uterine bleeding. In men the primary symptoms associated with low progesterone is insomnia and anxiety.

Progesterone is facilitative of the GABA/chloride channel in neurologic tissues and deficiencies can contribute to symptoms of GABA deficiency such as anxiety, insomnia, and excessive rumination.

In postmenopausal states a ratio of Progesterone to E2 ratio in excess of 30:1 has been reported to be protective against excessive estrogen stimulation leading to estrogen related cancers of the breast.

Excess progesterone levels, often seen with users of progesterone creams, can lead to weight gain, lethargy and depression. As toxic levels of hormone cream build in the adipose tissues the body will retain fat to buffer itself from the “toxins” and the excessive release of Progesterone from the depot will chronically stimulate GABA release in the brain contributing to abnormal and continuous inhibition of neurologic tissues causing depressed mood and fatigue.

**Testosterone** is a key hormone both for men and women to support libido and a sense of vitality. Use of androgen creams, especially testosterone gels, are increasingly common therapies but can be problematic if not carefully monitored. For those undergoing testosterone therapy an aromatase inhibitor to prevent conversion to estrogen and to prevent increases in dihydrotestosterone (DHT) a type II 5-alpha-reductase inhibitor should be considered.

**Melatonin** is a beneficial hormone secreted from the pineal gland that helps to initiate and maintain sleep. Low levels can be related to poor sleep hygiene such as irregular sleep times, excessive light prior to or during sleep and frequent travel in different time zones. 5-hydroxy tryptophan is an immediate precursor to melatonin and vitamin B6 is a critical cofactor in the conversion from 5-HTP to melatonin. A deficiency of either can lead to low melatonin output. Excessive melatonin augmentation/supplementation can lead to daytime grogginess and lethargy. If the melatonin sampling on this test is abnormal it is advised to obtain a melatonin biorhythm looking at 4 samples through the night and into the morning to get a look at timing of melatonin release in addition to peak output. If the output is good but the timing is irregular light therapy may be required.

For further interpretation assistance for E2, E3, P and T, please call for clinical technical support: 800-352-2351.

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## Report of Findings - **Acute Adrenal Dysfunction**

### *What does your test indicate?*

Your adrenal profile indicates that the demands on your body related to chronic stress are more than your system can adequately respond to. Because your Cortisol is elevated and your DHEA is low, you are showing signs of acute adrenal dysfunction.

To restore better function of your adrenal system, reduce your symptoms and improve your health it is recommended you reduce your total amount of chronic stress. Areas of stress to consider include:

*Poor blood sugar control* – skipping of meals and eating a diet high in carbohydrates

*Mental & Emotional Stress* – job demands, relational conflicts, financial pressures, etc.

*Chronic Inflammation/pain* – GI problems, infections, tobacco use, alcohol abuse, etc.

As you reduce the demands placed on your body from these and other stressors you will see improvements in your condition. To support your adrenal system while you make these changes the following plan is to be followed:

1. Read The Adrenal Recovery Kit (ARK) Patient Guide and implement the lifestyle changes and stress management suggestions it contains.
2. Utilize the following supplements to support your body during this time of recovery:

	Breakfast	Lunch	Dinner	Bedtime
Glycemic Foundation				
Tranquil Moment				
Adren-All				
Adapten-All				
AdreneVive				
DHEA				
Pregnenolone				
Licorice Root				
Phosphatidylserene				
Melatonin				
Natural ZZZs				
Alpha Base Ultimate				
Alpha Base Foundation				
Ortho B Complex				
Reacted Multimin				
Ortho Biotic				
Other:				

3. You need to return to this office 5-10 days after you begin your supplements to assess your initial response and answer any questions.
4. You will return once each month for 3-6 months to assess your progress in changing the stress you're under and to refill your supplements.
5. When you have made significant changes in your lifestyle to reduce stress we will retest your adrenal function. For most patients this is sometime between 3-6 months.

## Report of Findings - **Adrenal Fatigue**

### *What does your test indicate?*

Your adrenal profile indicates that the demands on your body related to chronic stress are more than your system can adequately handle. Though your Cortisol is within range, your DHEA is low, indicating you are in a mid-stage malfunction or adrenal fatigue.

To restore better function of your adrenal system, reduce your symptoms and improve your health it is recommended you reduce your total amount of chronic stress. Areas of stress to consider include:

*Poor blood sugar control* – skipping of meals and eating a diet high in carbohydrates  
*Mental & Emotional Stress* – job demands, relational conflicts, financial pressures, etc.  
*Chronic Inflammation/pain* – GI problems, infections, tobacco use, alcohol abuse, etc.

As you reduce the demands placed on your body from these and other stressors you will see improvements in your condition. To support your adrenal system while you make these changes the following plan is to be followed:

1. Read The Adrenal Recovery Kit (ARK) Patient Guide and implement the ideas contained in it.
2. Utilize the following supplements to support your body during this time of recovery:

	Breakfast	Lunch	Dinner	Bedtime
Glycemic Foundation				
Tranquil Moment				
Adren-All				
Adapten-All				
AdreneVive				
DHEA				
Pregnenolone				
Licorice Root				
Phosphatidylserene				
Melatonin				
Natural ZZZs				
Alpha Base Ultimate				
Alpha Base Foundation				
Ortho B Complex				
Reacted Multimin				
Ortho Biotic				
Other:				

3. You need to return to this office 5-10 days after you begin your supplements to assess your initial response and answer any questions.
4. You will return once each month for 3-6 months to assess your progress in changing the stress you're under and to refill your supplements.
5. When you have made significant changes in your lifestyle to reduce stress we will retest your adrenal function. For most patients this is sometime between 3-6 months.

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## Report of Findings – Adrenal Exhaustion

### *What does your test indicate?*

Your adrenal profile indicates the demands on your body related to chronic stress are more than your system can adequately handle. Because your Cortisol is low and your DHEA is low, you are in late stage of malfunction or adrenal exhaustion.

To restore better function of your adrenal system, reduce your symptoms and improve your health it is recommended you reduce your total amount of chronic stress. Areas of stress to consider include:

*Poor blood sugar control* – skipping of meals and eating a diet high in carbohydrates

*Mental & Emotional Stress* – job demands, relational conflicts, financial pressures, etc.

*Chronic Inflammation/pain* – GI problems, infections, tobacco use, alcohol abuse, etc.

As you reduce the demands placed on your body from these and other stressors you will see improvements in your condition. To support your adrenal system while you make these changes the following plan is to be followed:

1. Read The Adrenal Recovery Kit (ARK) Patient Guide and implement the ideas contained in it.
2. Utilize the following supplements to support your body during this time of recovery:

	Breakfast	Lunch	Dinner	Bedtime
Glycemic Foundation				
Tranquil Moment				
Adren-All				
Adapten-All				
AdreneVive				
DHEA				
Pregnenolone				
Licorice Root				
Phosphatidylserene				
Melatonin				
Natural ZZZs				
Alpha Base Ultimate				
Alpha Base Foundation				
Ortho B Complex				
Reacted Multimin				
Ortho Biotic				
Other:				

3. You need to return to this office 5-10 days after you begin your supplements to assess your initial response and answer any questions.
4. You will return once each month for 3-6 months to assess your progress in changing the stress you're under and to refill your supplements.
5. When you have made significant changes in your lifestyle to reduce stress we will retest your adrenal function. For most patients this is sometime between 3-6 months.



## Adrenal Health Questionnaire: Section A

### 1 pt for each yes

- |  |   |   |
|--|---|---|
| 1. Do you frequently have low body temperatures? (<98 degrees F) | Y | N |
| 2. Do you frequently get irritable?                              | Y | N |
| 3. Do you have poor memory or concentration?                     | Y | N |
| 4. Do you notice palpitations?                                   | Y | N |
| 5. Do you suffer from allergies or asthma?                       | Y | N |
| 6. Do you bruise easily or find your wounds heal slowly?         | Y | N |
| 7. Do you get frequent/chronic infections?                       | Y | N |
| 8. Do you have dry, thinning skin?                               | Y | N |
| 9. Do you get headaches?   | Y | N |
| 10. Do you have unexplained hair loss?                           | Y | N |
| 11. Do you skip meals?   | Y | N |
| 12. Do you exercise more than one time each week?                | Y | N |
| 13. Do you have thyroid problems?                                | Y | N |
| 14. Do you have low energy periods during the day?               | Y | N |
| 15. Do you need caffeine in the morning or after lunch?          | Y | N |

### 3 points for each yes

- |   |   |   |
|---|---|---|
| 16. Are you emotionally overstressed?                           | Y | N |
| 17. Do you get tenderness across your lower back?               | Y | N |
| 18. Do you suffer from depression or down moods?                | Y | N |
| 19. Do you have low blood pressure?                             | Y | N |
| 20. Do you experience a "second wind" (high energy) at bedtime? | Y | N |
| 21. Do you experience chronic or recurrent inflammation?        | Y | N |
| 22. Do you get light headed when sitting up or standing?        | Y | N |

### 5 points for each yes (yes to any of these should trigger adrenal test)

- |  |     |   |
|--|-----|---|
| 23. Do you suffer from chronic pain?   | Y   | N |
| 24. Do you suffer from low blood sugar/hypoglycemia?<br>(i.e. headaches, sleepiness, mood swings if skipping meals)  | Y   | N |
| 25. Do you suffer from insomnia?   | Y*  | N |
| 26. Do you experience symptoms of PMS?<br>(breast tenderness, abdominal cramping, heavy periods, mood swings)        | Y** | N |
| 27. Are you menopausal or peri menopausal?<br>(skipped periods, between 45-55 yrs old, hot flashes, vaginal dryness) | Y** | N |

**If your score >10 you probably have some degree of adrenal dysfunction**

**If your score >20 it is highly probably you have adrenal dysfunction**

**If your score >30 it is nearly certain you have adrenal dysfunction**

\*If you answered yes to question 25, please also complete **Section B - Insomnia**

\*\*If you answered yes to questions 26 or 27, please also complete **Section C - Female Hormone**



## Adrenal Health Questionnaire: Section B - Insomnia

- |   |   |   |
|---|---|---|
| 1. Do you experience difficulty falling asleep?                           | Y | N |
| 2. Does your mind race when you are trying to go to sleep?                | Y | N |
| 3. Does it take you more than 20 minutes to fall asleep once lights off?  | Y | N |
| 4. Do you experience a second wind (high energy) at night?                | Y | N |
| 5. Do you have trouble staying asleep?                                    | Y | N |
| 6. Do wake more than once per night?                                      | Y | N |
| 7. Do you have trouble going back to sleep once awakened?                 | Y | N |
| 8. Do you frequently waken between 2-3am?                                 | Y | N |
| 9. Do you experience restless legs when trying to sleep?                  | Y | N |
| 10. Do you recall your dreams?  | Y | N |
| 11. Do you have vivid or disturbing nightmares?                           | Y | N |
| 12. Do you sleep/nap during daylight hours?                               | Y | N |
| 13. Do you feel groggy or sleepy when you awaken?                         | Y | N |
| 14. Do you work "third shift" (work nights/sleep days)?                   | Y | N |
| 15. Are you depressed when weather is cloudy or overcast?                 | Y | N |
| 16. Are you taking any sleep pills, natural or prescription?              | Y | N |
| 17. Do you snore?   | Y | N |
| 18. Have you ever been diagnosed with sleep apnea?                        | Y | N |
| 19. Do you use coffee, caffeine, or other stimulants/medications?         | Y | N |
| 20. Do you have children or pets that sleep in your room/bed?             | Y | N |
| 21. Do you exercise late in the day?                                      | Y | N |
| 22. Do you eat carbohydrate snacks before bed (cake, cookies, ice cream)? | Y | N |
| 23. Do you eat nothing between dinner and bedtime?                        | Y | N |
| 24. Do you drink alcohol at night?  | Y | N |
| 25. Do you have sinus problems/allergies/asthma that is worse at night?   | Y | N |
| 26. Does your sleep partner snore or keep you awake due to restlessness?  | Y | N |
| 27. Have you ever had a concussive injury (black out due to head trauma)? | Y | N |
| 28. Is your insomnia related to your cycle?                               | Y | N |
| 29. Are you menopausal or have you had a hysterectomy?                    | Y | N |



## Adrenal Health Questionnaire: Section C - Female Hormone

### Pre & Peri Menopausal Women...

Do you experience frequent or irregular periods/menstruation?	Y	N
Do you experience severe abdominal cramping with your period?	Y	N
Do you get breast tenderness around the time of your periods?	Y	N
Do you get moody or irritable during or just before your period?	Y	N
Do you get heavy periods (heavy bleeding more than 2-3 days)?	Y	N
Do you have uterine fibroids?	Y	N
Do you have trouble getting to sleep because your mind is racing?	Y	N
Have you had trouble getting pregnant or experienced a miscarriage?	Y	N
Do you get anxiety or panic attacks?	Y	N
Do you take or have you taken birth control pills in the past 2 years?	Y	N
Have you gone without a period for more than 3 months?	Y	N
Have you experienced depression or post partum depression?	Y	N
Do you get headaches/migraines around the time of your period?	Y	N
Do you get cravings for sugar, fat, salt, or chocolate?	Y	N
Do you experience pain during intercourse?	Y	N
Do you get bloating and water retention during around your period?	Y	N
Do you take birth control pills, patches, injections, or hormone-types?	Y	N
Do you have a family history of breast, uterine, or ovarian cancer?	Y	N
Do you have endometriosis?	Y	N

### Post Menopausal Women...

Was your last menstrual period more than one year ago?	Y	N
Do you get "hot flashes"	Y	N
Do you get severe sweating at night?	Y	N
Do you have vaginal dryness?	Y	N
Have you noticed vaginal thinning?	Y	N
Do you notice a reduced libido?	Y	N
Are you concerned for osteoporosis or hip/spinal fractures?	Y	N
Do you have trouble getting to sleep because your mind is racing?	Y	N
Do you get anxiety or panic attacks?	Y	N
Do you experience pain during intercourse?	Y	N
Do you take hormone replacement (pills, creams, patches, ect)?	Y	N
Do you have a family history of breast, uterine, or ovarian cancer?	Y	N
Have you had a hysterectomy?	Y	N

# Adapten-All

Product #918

Supplement Facts <sup>V1</sup>		
Serving Size: 2 Capsules Servings Per Container: 60		
2 capsules contain	Amount Per Serving	% Daily Value
Vitamin A (as Betatene® Natural Mixed Carotenoids)	500 IU	10%
Vitamin C (as Sodium Ascorbate USP)	200 mg	333%
Vitamin E (as d-Alpha Tocopherol Succinate)	20 IU	67%
Niacin USP	20 mg	100%
Vitamin B6 (as Pyridoxine HCl USP, Pyridoxal 5'-Phosphate)	30 mg	1,500%
Vitamin B12 (as Methylcobalamin)	200 mcg	3,333%
Pantothenic Acid (as d-Calcium Pantothenate USP)	350 mg	3,500%
Eleuthero (Siberian Ginseng) Root Extract (Standardized to contain 0.8% Eleutherosides)	150 mg	*
Rhodiola rosea Root Extract (Standardized to contain 3% Rosavins)	150 mg	*
Schizandra Berry Extract	150 mg	*
Ashwaganda Root Extract (Standardized to contain 1.5% Withanolides)	75 mg	*
Licorice Root Extract (Standardized to contain 12% Glycyrrhizin Complex)	75 mg	*

Other Ingredients: Natural Vegetable Capsules. This product may contain one or more of the following: Calcium Silicate, Magnesium Stearate, Microcrystalline Cellulose, and Silicon Dioxide. Betatene® is a registered trademark of Cognis B.V.

## Rationale:

Adapten-All was designed to help those who suffer from fatigue, stress, and exhaustion due to adrenal insufficiencies. Adapten-All helps support and restore the integrity of the adrenals.

## Dose Form:

Two-piece veggie capsule, size 00

## Research Findings:

### Rhodiola Rosea:

- Rhodiola rosea has been used extensively in Russia, Scandinavia, and traditional folk medicine as an adaptogenic herb. Rhodiola rosea is used to treat fatigue, mental clarity, memory, and increase work productivity.<sup>1</sup>
- An adaptogen is a substance that nonspecifically increases the resistance of an organism and does not disturb normal biological parameters.
- The Soviet Ministry of Health approved a preparation of R. rosea as a medicine and tonic as a stimulant for fatigue. In Sweden, R. rosea is recognized as an Herbal Medicinal Product and also described as an antifatigue agent in the Textbook of Phytomedicine for Pharmacists. Denmark has also registered R. rosea as a medical product in the category of botanical drugs.<sup>1</sup>
- A randomized, double-blind, placebo controlled clinical study examined the effects of R. rosea on fatigue and stress. 161 cadets ages 19-21 volunteered. The study showed a significant antifatigue effect for those who received the R. rosea (185 mg, twice daily).<sup>2</sup>

### Schizandra Berry Extract:

- Schizandra has been used for centuries in China and Russia as an adaptogen. Schizandra has been used to enhance mental clarity, alleviate stress, and promote emotional wellness.
- In a placebo-controlled double-blind study, athletes were given Schizandra chinensis and Bryonia alba extracts or placebo. Those receiving the therapy had increased concentrations of nitric oxide and cortisol in blood plasma and saliva; these results have a direct relationship with increased physical performance of the athletes.<sup>3</sup>
- ESP-102, a standardized combined extract of Angelica gigas, Saururus chinensis, and Schizandra chinensis, was given to scopolamine-induced mice to examine the effects on learning and memory. Oral treatment (range of 10-100mg/kg) of ESP-102 significantly reduced memory deficits.<sup>4</sup>

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. The information provided here is intended to help health care professionals make informed decisions about recommending this product safely and effectively.

### Siberian Ginseng:

- Siberian ginseng is used in China to improve general health, improve memory, and enhance endurance. Siberian ginseng is regarded as an adaptogen.<sup>5</sup>
- The German Commission E approved eleuthero as a tonic to help with fatigue and concentration.<sup>5</sup>
- Specific compounds of Siberian ginseng, known as eleutherosides, have been shown to be the primary compounds responsible for Siberian ginseng's adaptogenic activity.<sup>6</sup>
- 20 elderly hypertensive volunteers were randomized in a double-blind manner to receive either 300 mg/day E. senticosus or placebo. Volunteers receiving the E. senticosus noticed improvement in mental health and social functioning after 4 weeks.<sup>6</sup>

### Licorice Root:

- Licorice root is regarded as an adaptogen and has been used for many health issues ranging from cough to ulcers.
- Licorice contains glycyrrhetic acid and glycyrrhizin, key components in adrenal health.
- Glycyrrhizin and glycyrrhetic acid can activate the receptors for key adrenal hormones (mineralocorticoids and glucocorticoids).
- Glycyrrhetic acid also helps to keep mineralocorticoids and glucocorticoids in their more active forms.
- Licorice also inhibits the enzyme that converts cortisol into the inactive cortisone.<sup>7</sup>

### Ashwagandha:

- Ashwagandha (*Withania somnifera*) has traditionally been used in Ayurvedic medicine and has been found to have many adaptogenic properties including anti-stress, antioxidant, immunomodulatory and rejuventating effects.<sup>8</sup>
- An extract of Ashwagandha (100mg/kg of weight) or placebo was given to mice prior to a forced swim test. It was found that the extract approximately doubled the swim time compared to those receiving the placebo.<sup>8</sup>
- In a similar swim test study in mice receiving Ashwagandha, it was found that Ashwagandha prevented a weight increase of the adrenals and a reduction in ascorbic acid content of the adrenals usually caused by the swim test.<sup>8</sup>

### Pantothenic Acid:

- Pantothenic acid breaks down in the body to coenzyme A, which plays a large part in energy production.
- Coenzyme A is needed for function of the adrenal cortex. It also supports the adrenal glands in the making of key adrenal hormones that counteract the stress response.<sup>9</sup>
- In a study evaluating the effects of pantothenic acid on glutathione production, pantothenic acid was found to increase CoA levels in the body, leading to increased ATP production.<sup>10</sup>

### Vitamin Blend:

- Niacin plays a vital role in many metabolic functions in the body. Niacin supplies energy to cells and assists in the production of adrenal hormones.<sup>11</sup>
- Vitamin C levels are among the highest in the adrenal glands compared with other organs. Vitamin C plays necessary roles in catecholamine and adrenal steroidogenesis synthesis, and for general health of the adrenals.<sup>12</sup>
- The adrenal glands have low levels of B vitamins when our bodies are under stress. By supplementing with B vitamins, we replace what our adrenals have lost during stress.

### Dose:

2 capsules 1-2 times per day or as recommended by your health care professional.

### Contraindications, Adverse or Other Reactions:

Do not take if pregnant or nursing. Can be contraindicated in those with hypertension, liver or kidney disease.



## References:

1. American Botanical Council. American Botanical Council. rhodiola rosea: A Phytomedicinal Overview. <http://www.herbalgram.org>. 2002;
2. Shevtsov, V.A.; Zholus, B.I. et al. A randomized trial of two different doses of a SHR-5 Rhodiola rosea extract versus placebo and control of capacity for mental work. *Phytomedicine*. 2003; 10(2-3):95-105.
3. Panossian, A.G.; Oganessian, A.S. et al. Effects of heavy physical exercise and adaptogens on nitric oxide content in human saliva. *Phytomedicine*. 1999; 6(1):17-26.
4. Kang, S.Y.; Lee, K.Y. et al. ESP-102, a standardized combined extract of *Angelica gigas*, *Saururus chinensis* and *Schizandra chinensis*, significantly improved scopolamine-induced memory impairment in mice. *Life Sci*. 2005; 76(15):1691-1705.
5. American Botanical Council. American Botanical Council. Eleuthero root. <http://www.herbalgram.org>. 2000;
6. Cicero, A.F.; Derosa, G. et al. Effects of Siberian ginseng (*Eleutherococcus senticosus maxim.*) on elderly quality of life: a randomized clinical trial. *Arch Gerontol Geriatr Suppl*. 2004;(9):69-73.
7. Williams TG. Adrenal Stress: Measureing and Treating. *The Standard*. 2000; 3(1)
8. Mishra, L.C.; Singh, B.B.; and Dagenais, S. Scientific basis for the therapeutic use of *Withania somnifera* (ashwagandha): a review. *Altern Med Rev*. 2000; 5(4):334-346.
9. Integrative Medicine Access. Vitamin B5 (Pantothenic Acid). 2000;
10. Slyshenkov, V.S.; Dymkowska, D.; and Wojtczak, L. Pantothenic acid and pantothenol increase biosynthesis of glutathione by boosting cell energetics. *FEBS Lett*. 2004; 569(1-3):169-172.
11. AltHealth. Niacin: Essential Background Reading. <http://www.althealth.co.uk>. 2008;
12. Patak, P.; Willenberg, H.S.; and Bornstein, S.R. Vitamin C is an important cofactor for both adrenal cortex and adrenal medulla. *Endocr Res*. 2004; 30(4):871-875.



# Adren-All

Product #917

Supplement Facts <sup>V1</sup>		
Serving Size: 2 Capsules		
Servings Per Container: 30		
2 capsules contain	Amount Per Serving	% Daily Value
Vitamin A (as Betatene® Natural Mixed Carotenoids)	500 IU	10%
Vitamin C (as Sodium Ascorbate USP)	200 mg	333%
Vitamin E (as d-Alpha Tocopherol Succinate)	20 IU	67%
Niacin USP	20 mg	100%
Vitamin B6 (as Pyridoxine HCl USP, Pyridoxal 5'-Phosphate)	30 mg	1,500%
Vitamin B12 (as Methylcobalamin)	200 mcg	3,333%
Pantothenic Acid (as d-Calcium Pantothenate USP)	350 mg	3,500%
Adrenal Concentrate (Bovine)	220 mg	*
Eleuthero (Siberian Ginseng) Root Extract (Standardized to contain 0.8% Eleutherosides)	100 mg	*
Rhodiola rosea Root Extract (Standardized to contain 3% Rosavins)	100 mg	*
Schizandra Berry Extract	100 mg	*
Licorice Root Extract (Standardized to contain 12% Glycyrrhizin complex)	75 mg	*

\* % Daily Value not established

Other Ingredients: Natural Gelatin Capsules. This product may contain one or more of the following: Calcium Silicate, Magnesium Stearate, Microcrystalline Cellulose and Silicon Dioxide. Betatene® is a registered trademark of Cognis B.V.

## Rationale:

Adren-All was designed to help those who suffer from fatigue, stress, and exhaustion due to adrenal insufficiencies. Adren-All helps support and restore the integrity of the adrenals.

## Dose Form:

Two-piece gelatin capsule, size 00

## Research Findings:

### Adaptogens:

- An adaptogen is a substance that nonspecifically increases the resistance of an organism and does not disturb normal biological parameters.

### Rhodiola Rosea:

- Rhodiola rosea has been used extensively in Russia, Scandinavia, and traditional folk medicine as an adaptogenic herb. Rhodiola rosea is used to treat fatigue, mental clarity, memory, and increase work productivity.<sup>1</sup>
- The Soviet Ministry of Health approved a preparation of R. rosea as a medicine and tonic as a stimulant for fatigue. In Sweden, R. rosea is recognized as an Herbal Medicinal Product and also described as an antifatigue agent in the Textbook of Phytomedicine for Pharmacists. Denmark has also registered R. rosea as a medical product in the category of botanical drugs.<sup>1</sup>
- A randomized, double-blind, placebo controlled clinical study examined the effects of R. rosea on fatigue and stress. 161 cadets ages 19-21 volunteered. The study showed a significant antifatigue effect for those who received the R. rosea (185 mg, twice daily).<sup>2</sup>

### Schizandra Berry Extract:

- Schizandra has been used for centuries in China and Russia as an adaptogen. Schizandra has been used to enhance mental clarity, alleviate stress, and promote emotional wellness.
- In a placebo-controlled double-blind study, athletes were given Schizandra chinensis and Bryonia alba extracts or placebo. Those receiving the therapy had increased concentrations of nitric oxide and cortisol in blood plasma and saliva; these results have a direct relationship with increased physical performance of the athletes.<sup>3</sup>

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. The information provided here is intended to help health care professionals make informed decisions about recommending this product safely and effectively.

- ESP-102, a standardized combined extract of *Angelica gigas*, *Saururus chinensis*, and *Schizandra chinensis*, was given to scopolamine-induced mice to examine the effects on learning and memory. Oral treatment (range of 10-100mg/kg) of ESP-102 significantly reduced memory deficits.<sup>4</sup>

#### Siberian Ginseng:

- Siberian ginseng is used in China to improve general health, improve memory, and enhance endurance. Siberian ginseng is regarded as an adaptogen.<sup>5</sup>
- The German Commission E approved eleuthero as a tonic to help with fatigue and concentration.<sup>5</sup>
- Specific compounds of Siberian ginseng, known as eleutherosides, have been shown to be the primary compounds responsible for Siberian ginseng's adaptogenic activity.<sup>6</sup>
- 20 elderly hypertensive volunteers were randomized in a double-blind manner to receive either 300 mg/day *E. senticosus* or placebo. Volunteers receiving the *E. senticosus* noticed improvement in mental health and social functioning after 4 weeks.<sup>6</sup>

#### Licorice Root:

- Licorice root is regarded as an adaptogen and has been used for many health issues ranging from cough to ulcers.
- Licorice contains glycyrrhetic acid and glycyrrhizin, key components in adrenal health.
- Glycyrrhizin and glycyrrhetic acid can activate the receptors for key adrenal hormones (mineralocorticoids and glucocorticoids).
- Glycyrrhetic acid also helps to keep mineralocorticoids and glucocorticoids in their more active forms.
- Licorice also inhibits the enzyme that converts cortisol into the inactive cortisone.<sup>7</sup>

#### Pantothenic Acid:

- Pantothenic acid breaks down in the body to coenzyme A, which plays a large part in energy production.
- Coenzyme A is needed for function of the adrenal cortex. It also supports the adrenal glands in the making of key adrenal hormones that counteract the stress response.<sup>8</sup>
- In a study evaluating the effects of pantothenic acid on glutathione production, pantothenic acid was found to increase CoA levels in the body, leading to increased ATP production.<sup>9</sup>

#### Vitamin Blend:

- Niacin plays a vital role in many metabolic functions in the body. Niacin supplies energy to cells and assists in the production of adrenal hormones.<sup>10</sup>
- Vitamin C levels are among the highest in the adrenal glands compared with other organs. Vitamin C plays necessary roles in catecholamine and adrenal steroidogenesis synthesis, and for general health of the adrenals.<sup>11</sup>
- The adrenal glands have low levels of B vitamins when our bodies are under stress. By supplementing with B vitamins, we replace what our adrenals have lost during stress.

#### Dose:

2 capsules 1-2 times per day or as recommended by your health care professional.

#### Contraindications, Adverse or Other Reactions:

Do not take if pregnant or nursing. Can be contraindicated in those with hypertension, liver or kidney disease.

#### References:

1. American Botanical Council. American Botanical Council. *Rhodiola rosea*: A Phytomedicinal Overview. <http://www.herbalgram.org>. 2002;
2. Shevtsov, V.A.; Zholus, B.I. et al. A randomized trial of two different doses of a SHR-5 *Rhodiola rosea* extract versus placebo and control of capacity for mental work. *Phytomedicine*. 2003; 10(2-3):95-105.
3. Panossian, A.G.; Oganessian, A.S. et al. Effects of heavy physical exercise and adaptogens on nitric oxide content in human saliva. *Phytomedicine*. 1999; 6(1):17-26.
4. Kang, S.Y.; Lee, K.Y. et al. ESP-102, a standardized combined extract of *Angelica gigas*, *Saururus chinensis* and *Schizandra chinensis*, significantly improved scopolamine-induced memory impairment in mice. *Life Sci*. 2005; 76(15):1691-1705.
5. American Botanical Council. American Botanical Council. *Eleuthero root*. <http://www.herbalgram.org>. 2000;
6. Cicero, A.F.; Derosa, G. et al. Effects of Siberian ginseng (*Eleutherococcus senticosus maxim.*) on elderly quality of life: a randomized clinical trial. *Arch Gerontol Geriatr Suppl*. 2004;(9):69-73.
7. Guillems TG. *Adrenal Stress: Measuring and Treating*. The Standard. 2000; 3(1)
8. Integrative Medicine Access. Vitamin B5 (Pantothenic Acid). 2000;
9. Slyshenkov, V.S.; Dymkowska, D.; and Wojtczak, L. Pantothenic acid and pantothenol increase biosynthesis of glutathione by boosting cell energetics. *FEBS Lett*. 2004; 569(1-3):169-172.
10. AltHealth. Niacin: Essential Background Reading. <http://www.althealth.co.uk>. 2008;
11. Patak, P.; Willenberg, H.S.; and Bornstein, S.R. Vitamin C is an important cofactor for both adrenal cortex and adrenal medulla. *Endocr Res*. 2004; 30(4):871-875.



# AdreneVive

Product #919

Supplement Facts		
Serving Size: 2 Capsules		
Servings Per Container: 30		
2 capsules contain	Amount Per Serving	% Daily Value
Ashwaganda Root Extract (Standardized to contain 1.5% Withanolides)	250 mg	*
Skullcap Root Extract (Standardized to contain 30% Flavones as <i>S. baicalensis</i> )	250 mg	*
Eleuthero (Siberian Ginseng) Root Extract (Standardized to contain 0.8% Eleutheroides)	200 mg	*
Rhodiola rosea Root Extract (Standardized to contain 3% Rosavins)	200 mg	*
L-Theanine	100 mg	*
Phosphatidylserine (from soy Lecithin)	100 mg	*

\* % Daily Value not established

Other Ingredients: Natural Vegetable Capsules. This product may contain one or more of the following: Calcium Silicate, Magnesium Stearate, Microcrystalline Cellulose, Silicon Dioxide, and Stearic Acid.

## Rationale:

AdreneVive is a mixture of ingredients to help lower excess cortisol, increase the HPA axis feedback loop and reduce the side-effects of acute cortisol and adrenal stress.

## Dose Form:

Two-piece veggie capsule, size 00

## Research Findings:

### Ashwagandha:

- Ashwagandha (*Withania somnifera*) has traditionally been used in Ayurvedic medicine and has been found to have many adaptogenic properties including anti-stress, antioxidant, immunomodulatory and rejuvenating effects.<sup>1</sup>
- An extract of Ashwagandha (100mg/kg of weight) or placebo was given to mice prior to a forced swim test. It was found that the extract approximately doubled the swim time compared to those receiving the placebo.<sup>1</sup>
- In a similar swim test study in mice receiving Ashwagandha, it was found that Ashwagandha prevented a weight increase of the adrenals and a reduction in ascorbic acid content of the adrenals usually caused by the swim test.<sup>1</sup>

### L-Theanine:

- L-Theanine is an amino acid found predominately in green tea. It crosses the blood brain barrier and has been found to increase dopamine and serotonin production in the brain. L-Theanine is also responsible for increasing alpha-brain wave activity, a sign of relaxation.<sup>2</sup>
- 200 mg of L-Theanine was shown to increase alpha-brain wave activity in students and produce a sense of relaxation.<sup>2</sup>
- In a study examining the effects of L-Theanine on stress, volunteers were given either L-Theanine at the beginning or middle of a stressful arithmetic problem, placebo or nothing. Those receiving the L-Theanine had a reduction in heart rate and salivary IgA, both responses to an acute stress task.<sup>3</sup>
- In a study measuring the effects of a L-Theanine containing soft drink on brain activity (measured at 1, 2, 3, and 4 hours after ingestion by VEP and EEG), it was found that the L-Theanine was able to attenuate a higher level of mental performance.<sup>4</sup>

### Phosphatidylserine:

- Phosphatidylserine is a soy derived phospholipid that is found in high concentrations in the brain.
- In studies administering phosphatidylserine (50-800 mg) to subjects under stress (physical, emotional, mental, etc), it has been found that phosphatidylserine blunts the effects of cortisol and ACTH. Authors conclude that phosphatidylserine may counteract stress induced activation of the HPA axis.<sup>5,6,7,8</sup>
- Administration of higher doses (100-800mg) of phosphatidylserine have been studied in exercising subjects. It has been found that phosphatidylserine has reduced the cortisol response to overtraining, improve the feeling of well-being, and improve performance.<sup>9,10,11</sup>

### Rhodiola Rosea:

- *Rhodiola rosea* has been used extensively in Russia, Scandinavia, and traditional folk medicine as an adaptogenic herb. *Rhodiola rosea* is used to treat fatigue, mental clarity, memory, and increase work productivity.<sup>12</sup>

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. The information provided here is intended to help health care professionals make informed decisions about recommending this product safely and effectively.

- An adaptogen is a substance that nonspecifically increases the resistance of an organism and does not disturb normal biological parameters.
- The Soviet Ministry of Health approved a preparation of *R. rosea* as a medicine and tonic as a stimulant for fatigue. In Sweden, *R. rosea* is recognized as an Herbal Medicinal Product and also described as an antifatigue agent in the Textbook of Phytomedicine for Pharmacists. Denmark has also registered *R. rosea* as a medical product in the category of botanical drugs.<sup>12</sup>
- A randomized, double-blind, placebo controlled clinical study examined the effects of *R. rosea* on fatigue and stress. 161 cadets ages 19-21 volunteered. The study showed a significant antifatigue effect for those who received the *R. rosea* (185 mg, twice daily).<sup>13</sup>

#### Siberian Ginseng:

- Siberian ginseng is used in China to improve general health, improve memory, and enhance endurance. Siberian ginseng is regarded as an adaptogen.<sup>14</sup>
- The German Commission E approved eleuthero as a tonic to help with fatigue and concentration.<sup>14</sup>
- Specific compounds of Siberian ginseng, known as eleutherosides, have been shown to be the primary compounds responsible for Siberian ginseng's adaptogenic activity.<sup>15</sup>
- 20 elderly hypertensive volunteers were randomized in a double-blind manner to receive either 300 mg/day *E. senticosus* or placebo. Volunteers receiving the *E. senticosus* noticed improvement in mental health and social functioning after 4 weeks.<sup>15</sup>

#### Skullcap Root:

- The effects of SSF, an active constituent extracted from stems and leaves of baical skullcap, was examined in mice given D-galactose to impair memory. It was found that SSF could significantly reverse the increased latencies and number of errors in mice undergoing a water maze task. The authors conclude that SSF could ameliorate the cognitive deficits and pathological alterations of neuron and immune systems in mice given d-galactose.<sup>16</sup>
- Wogonin, a plant flavone found in *Scutellaria baicalensis*, has been found to inhibit dexamethasone-induced (a glucocorticoid) apoptotic changes such as phosphatidylserine translocation and caspase activation in rat thymocytes. This suggests that wogonin may be a likely candidate to reduce the immunosuppressive side effect of glucocorticoid.<sup>17</sup>

#### Dose:

2 capsules 1-2 times per day or as recommended by your health care professional.

#### Contraindications, Adverse or Other Reactions:

Do not consume this product if you are pregnant or nursing, consult your physician for information.

#### References:

1. Mishra, L.C.; Singh, B.B.; and Dagenais, S. Scientific basis for the therapeutic use of *Withania somnifera* (ashwagandha): a review. *Altern Med Rev.* 2000; 5(4):334-346.
2. L-theanine . Monograph. *Altern Med Rev.* 2005; 10(2):136-138.
3. Kimura, K.; Ozeki, M. et al. L-Theanine reduces psychological and physiological stress responses. *Biol Psychol.* 2007; 74(1):39-45.
4. Dimpfel, W.; Kler, A. et al. Source density analysis of the human EEG after ingestion of a drink containing decaffeinated extract of green tea enriched with L-theanine and theogallin. *Nutr Neurosci.* 2007; 10(3-4):169-180.
5. Monteleone, P.; Maj, M. et al. Blunting by chronic phosphatidylserine administration of the stress-induced activation of the hypothalamo-pituitary-adrenal axis in healthy men. *Eur J Clin Pharmacol.* 1992; 42(4):385-388.
6. Benton, D.; Donohoe, R.T. et al. The influence of phosphatidylserine supplementation on mood and heart rate when faced with an acute stressor. *Nutr Neurosci.* 2001; 4(3):169-178.
7. Monteleone, P.; Beinat, L. et al. Effects of phosphatidylserine on the neuroendocrine response to physical stress in humans. *Neuroendocrinology.* 1990; 52(3):243-248.
8. Hellhammer, J.; Fries, E. et al. Effects of soy lecithin phosphatidic acid and phosphatidylserine complex (PAS) on the endocrine and psychological responses to mental stress. *Stress.* 2004; 7(2):119-126.
9. Kingsley, M. Effects of phosphatidylserine supplementation on exercising humans. *Sports Med.* 2006; 36(8):657-669.
10. Kingsley, M.I.; Miller, M. et al. Effects of phosphatidylserine on exercise capacity during cycling in active males. *Med Sci Sports Exerc.* 2006; 38(1):64-71.
11. Jager, R.; Purpura, M.; and Kingsley, M. Phospholipids and sports performance. *J Int Soc Sports Nutr.* 2007; 4:5-
12. American Botanical Council. American Botanical Council. *rhodiola rosea: A Phytomedicinal Overview.* <http://www.herbalgram.org>. 2002;
13. Shevtsov, V.A.; Zholus, B.I. et al. A randomized trial of two different doses of a SHR-5 *Rhodiola rosea* extract versus placebo and control of capacity for mental work. *Phytomedicine.* 2003; 10(2-3):95-105.
14. American Botanical Council. American Botanical Council. *Eleuthero root.* <http://www.herbalgram.org>. 2000;
15. Cicero, A.F.; Derosa, G. et al. Effects of Siberian ginseng (*Eleutherococcus senticosus maxim.*) on elderly quality of life: a randomized clinical trial. *Arch Gerontol Geriatr Suppl.* 2004;(9):69-73.
16. Shang, Y.Z.; Gong, M.Y. et al. Improving effects of SSF on memory deficits and pathological changes of neural and immunological systems in senescent mice. *Acta Pharmacol Sin.* 2001; 22(12):1078-1083.
17. Enomoto, R.; Suzuki, C. et al. Wogonin prevents immunosuppressive action but not anti-inflammatory effect induced by glucocorticoid. *Ann NY Acad Sci.* 2007; 1095:412-417.



# Glycemic Foundation Chocolate

Product #920

<b>Supplement Facts</b>		
Serving Size: 31.7 Grams (~ 2 level unpacked scoops)		
Servings Per Container: 30		
31.7 grams contain	Amount Per Serving	% Daily Value*
<b>Calories</b>	130	
Calories from Fat	30	
<b>Total Fat</b>	3 g	5%
<b>Total Carbohydrate</b>	16 g	5%
Dietary Fiber	12 g	48%
Soluble Fiber	9 g	
Sugars	3 g	
<b>Protein</b>	10 g	20%
Iron		15%
Chromium (as ChromeMate®)	400 mcg	333%
<b>Proprietary Blend</b>	27 g	
Organic Oryzatein™ Whole Grain Brown Rice Protein Concentrate		**
Larch Arabinogalactan (FiberAid™)		**
Organic Flaxseed Flour		**
Inulin		**
Gum Arabic		**
Guar Gum		**
Alpha Linolenic Acid (from Flaxseed Flour)	1,300 mg	**
Alpha Lipoic Acid	100 mg	**
Vanadyl Sulfate Hydrate	5 mg	**
**% Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.		
** % Daily Value not established		
Calories per gram:		
Fat 9 - Carbohydrate 4 - Protein 4		

Other Ingredients: Natural Vanilla Flavor (msg free), Cocoa Processed with Alkali, Natural Chocolate Flavor (msg free), Silicon Dioxide, Magnasweet™, Stevia Leaf Extract and Mixed Tocopherol Blend. ChromeMate® is a registered trademark of InterHealth N.I. ChromeMate® brand niacin-bound chromium (U.S. Patents 4,923,855, 4,954,492 and 5,194,615). Organic Oryzatein™ Whole Grain Brown Rice Protein Concentrate is a trademark of Axiom Foods. Magnasweet™ is a trademark of Mafco Worldwide Corporation. FiberAid™ is a trademark of Lonza Inc.

## Rationale:

Glycemic Foundation is designed to provide a high-level of dietary fiber, especially soluble fiber which will provide stability to daily glycemic control.

## Dose Form:

Powder

## Research Findings:

### Macronutrient Content:

- Glycemic Foundation is designed to promote a low insulin response when taken alone or in combination with other foods. The features which promote this are:
  - High fiber content (12 grams)
  - High soluble fiber (9 grams)
  - Fermentable fibers from inulin and FiberAid
  - 10 grams of protein from brown rice
  - 1.3 grams of omega-3 fatty acids from organic flaxseed.
  - No added sugar

### Inulin:

- Inulin is a natural fructan (oligosaccharide) derived from chicory roots. It has a very low glycemic value due to its low digestibility, but has multiple benefits as a fermentable fiber as well as a probiotic (promotes the growth of bifidobacteria).<sup>1,2</sup>
- Studies show inulin has had modest improvements in:<sup>3</sup>
  - Reducing post-prandial glycemia
  - Reducing post-prandial and fasting insulin
  - Reducing triglycerides

### FiberAid (Larch Arabinogalactan):

- Larch arabinogalactan is a soluble fiber that acts as a prebiotic agent in the gut. It has also been shown to have immune stimulating properties.
- Larch arabinogalactan increases short-chain fatty acid production (primarily butyrate) from the fermentation by microflora. Short-chain fatty acids are important in colon health and serve as an energy source for the cells in the colon.<sup>4</sup>
- In a study of 22 patients, 15 and 30 grams of larch arabinogalactan increased Lactobacillus after six weeks. Fecal ammonia levels also decreased.<sup>5</sup>

### Organic Flaxseed Powder:

- Flaxseeds are a generous source of both omega-3 fatty acids (ALA) and fiber. Our organic flax seeds provide a total of 1.3 grams of ALA per scoop, while contributing additional protein, lignans and numerous micronutrients.

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### Lipoic Acid:<sup>6,7</sup>

- Increase GLUT4 stimulated glucose transport independent of insulin (lowering plasma glucose levels).
- Lowers oxidative stress in diabetic patients.<sup>8</sup>
- Prevents insulin sensitivity/ "Syndrome X" in experimental animal models.<sup>9</sup>

### Chromium:<sup>10,11,12</sup>

- A chromium containing complex known as Glucose Tolerance Factor has been identified for years to play a key role in insulin-dependent glucose uptake.
- Studies now show that 4 chromium molecules are needed to fully activate the insulin receptor via a chromium-binding protein called chromodulin.

### Vanadyl Sulfate:<sup>13,14,15</sup>

- Increases GLUT-4 synthesis and mobilization to cell surfaces-increasing glucose transport.
- Improves muscle cell sensitivity to insulin.
- Prevents de-phosphorylation of GLUT-4 signaling pathways.<sup>15</sup>

### Dose:

For the first 3 days of use, add 1 scoop (½ serving) of Glycemic Foundation to 8oz. of water or the beverage of your choice, stir and drink between or before meals 1 to 3 times daily. Increase dose to two scoops (31.7g) of Glycemic Foundation after 3 days, or as recommended by your health care professional.

### Contraindications, Adverse or Other Reactions:

Class 2. If you are pregnant or nursing consult your health care professional before taking this product. Glycemic Foundation contains significant levels of soluble and fermentable fibers. Some individuals may experience gas discomfort when initially taking the product. We recommend using ½ scoop doses for the first several days to allow for bowel adjustments before regularly using the full dose.

### References:

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# Glycemic Foundation Smoothie Boost

Product #922

<b>Supplement Facts</b>		
Serving Size: 31.4 Grams (~ 2 level unpacked scoops)		
Servings Per Container: 30		
31.4 grams contain	Amount Per Serving	% Daily Value*
<b>Calories</b>	130	
Calories from Fat	30	
<b>Total Fat</b>	3 g	5%
<b>Total Carbohydrate</b>	17 g	6%
Dietary Fiber	12 g	48%
Soluble Fiber	9 g	
Sugars	4 g	
<b>Protein</b>	10 g	20%
Iron		10%
Chromium (as ChromeMate®)	400 mcg	333%
<b>Proprietary Blend</b>	27 g	
Organic Oryzatein™ Whole Grain Brown Rice Protein Concentrate		**
Larch Arabinogalactan (FiberAid™)		**
Organic Flaxseed Flour		**
Inulin		**
Gum Arabic		**
Guar Gum		**
Alpha Linolenic Acid (from Flaxseed Flour)	1,300 mg	**
Alpha Lipoic Acid	100 mg	**
Vanadyl Sulfate Hydrate	5 mg	**
*% Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.		
** % Daily Value not established		
Calories per gram:		
Fat 9 - Carbohydrate 4 - Protein 4		

Other Ingredients: Natural Vanilla Flavor (msg free), Silicon Dioxide, Stevia Leaf Extract and Mixed Tocopherol Blend. ChromeMate® is a registered trademark of InterHealth N.I. ChromeMate® brand niacin-bound chromium (U.S. Patents 4,923,855, 4,954,492 and 5,194,615). Organic Oryzatein™ Whole Grain Brown Rice Protein Concentrate is a trademark of Axiom Foods. FiberAid™ is a trademark of Lonza Inc.

## Rationale:

Glycemic Foundation is designed to provide a high-level of dietary fiber, especially soluble fiber which will provide stability to daily glycemic control.

## Dose Form:

Powder

## Research Findings:

### Macronutrient Content:

- Glycemic Foundation is designed to promote a low insulin response when taken alone or in combination with other foods. The features which promote this are:
  - High fiber content (12 grams)
  - High soluble fiber (9 grams)
  - Fermentable fibers from inulin and FiberAid
  - 10 grams of protein from brown rice
  - 1.3 grams of omega-3 fatty acids from organic flaxseed.
  - No added sugar

### Inulin:

- Inulin is a natural fructan (oligosaccharide) derived from chicory roots. It has a very low glycemic value due to its low digestibility, but has multiple benefits as a fermentable fiber as well as a probiotic (promotes the growth of bifidobacteria).<sup>1,2</sup>
- Studies show inulin has had modest improvements in:<sup>3</sup>
  - Reducing post-prandial glycemia
  - Reducing post-prandial and fasting insulin
  - Reducing triglycerides

### FiberAid (Larch Arabinogalactan):

- Larch arabinogalactan is a soluble fiber that acts as a prebiotic agent in the gut. It has also been shown to have immune stimulating properties.
- Larch arabinogalactan increases short-chain fatty acid production (primarily butyrate) from the fermentation by microflora. Short-chain fatty acids are important in colon health and serve as an energy source for the cells in the colon.<sup>4</sup>
- In a study of 22 patients, 15 and 30 grams of larch arabinogalactan increased Lactobacillus after six weeks. Fecal ammonia levels also decreased.<sup>5</sup>

### Organic Flaxseed Powder:

- Flaxseeds are a generous source of both omega-3 fatty acids (ALA) and fiber. Our organic flax seeds provide a total of 1.3 grams of ALA per scoop, while contributing additional protein, lignans and numerous micronutrients.

These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease. The information provided here is intended to help health care professionals make informed decisions about recommending this product safely and effectively.

### Lipoic Acid:<sup>6,7</sup>

- Increase GLUT4 stimulated glucose transport independent of insulin (lowering plasma glucose levels).
- Lowers oxidative stress in diabetic patients.<sup>8</sup>
- Prevents insulin sensitivity/ "Syndrome X" in experimental animal models.<sup>9</sup>

### Chromium:<sup>10,11,12</sup>

- A chromium containing complex known as Glucose Tolerance Factor has been identified for years to play a key role in insulin-dependent glucose uptake.
- Studies now show that 4 chromium molecules are needed to fully activate the insulin receptor via a chromium-binding protein called chromodulin.

### Vanadyl Sulfate:<sup>13,14,15</sup>

- Increases GLUT-4 synthesis and mobilization to cell surfaces-increasing glucose transport.
- Improves muscle cell sensitivity to insulin.
- Prevents de-phosphorylation of GLUT-4 signaling pathways.<sup>15</sup>

### Dose:

For the first 3 days of use, add 1 scoop (½ serving) of Glycemic Foundation to 8 oz. of water or the beverage of your choice, stir and drink between or before meals 1 to 3 times daily. Increase dose to two scoops (31.4g) of Glycemic Foundation after 3 days, or as recommended by your health care professional.

### Contraindications, Adverse or Other Reactions:

Class 2. If you are pregnant or nursing consult your health care professional before taking this product. Glycemic Foundation contains significant levels of soluble and fermentable fibers. Some individuals may experience gas discomfort when initially taking the product. We recommend using ½ scoop doses for the first several days to allow for bowel adjustments before regularly using the full dose.

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## Frequently Asked Questions

**Q:** *Which test is right for my patient?*

**A:** The ARK 205 provides the most comprehensive assessment of stress hormones, markers associated with poor sleep, and a snapshot of sex hormones. This panel provides for best case management when dealing with adrenal problems, sleep issues, and symptoms related to sex hormones such as PMS, cyclic migraines, and infertility. For these reasons consider choosing the ARK #205 for most patients needing initial testing. The ARK#201 is useful as a follow up test when needing to recheck only the Cortisol and DHEA levels and as a lower price point for patients without the means to pay for the more comprehensive assessment.

**Q:** *My patient drank caffeine during the day of collection. Now what?*

**A:** If possible, have the patient rinse the used vials with tap water and allow to air dry. Then recollect all samples on the next day. All samples should be collected on the same day.

**Q:** *My patient is taking hormones now, how does this affect the test?*

**A:** If you want to measure the effects of the patient's current hormone therapy, then collect the test while on the hormones. If you want to assess the patient's endogenous hormone production, you must wait until the body has eliminated the therapeutic hormones. For sublingual doses, this is 3-5 days off the hormone. For oral/swallowed doses, wait 7-10 days. For patches and creams, it is suggested to wait 21-28 days. Some patients taking creams will not completely "wash out" of hormone for months and you may want to consider testing both initially and intermittently as symptoms can change over the wash out period.

**Q:** *How do I interpret this test, I can't find a similar example in the guide?*

**A:** Most protocols will be based on the measurement of a low DHEA (less than 4) and the Cortisol Sum: elevated, within range or below range. If you need further direction or have a specific question not covered in the Road Map, please call Technical Support at 800-332-2351 to schedule an appointment.

**Q:** *How long before my patient sees changes after starting the supplements?*

**A:** While variable, patients following good glycemic control habits will usually see symptom changes within 3-7 days of starting supplement protocols, it is advised they return to the office one week after starting protocol so that the practitioner can assess their initial response, answer questions or make adjustments to the protocol. That appointment is also a good opportunity to stress importance of adherence to good lifestyle habits.

**Q:** *The patient says they feel worse after starting the protocol, why?*

**A:** While not the norm, it is not uncommon for a patient's symptoms to worsen during the first week after starting the protocol. This is more likely in patients whose tests demonstrate Stage III adrenal fatigue and have below normal cortisol sum. When the supplements enhance their output of Cortisol, certain systems are facilitated (i.e.

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immune, neurologic) and they may become aware of underlying problems that were previously silent. If after 10-14 days on the suggested protocols patients still are feeling worse, it may be necessary to suspend the protocol until further testing can be accomplished.

**Q:** *When does the patient retest after starting the protocol?*

**A:** Retesting of adrenal function will not reveal improvement until a patient reduces demands from stress by making lifestyle changes (e.g. glycemic control, improved sleep, appropriate exercise). The purpose of the supplement protocol is to support the body during the time lifestyle changes are being made. This often takes 3-6 months. Testing prior to this is unlikely to reveal measurable improvements in adrenal function.

**Q:** *Should the patient stop the supplements before retesting?*

**A:** Yes, it is necessary to stop adrenal and hormonal products to see improvement in adrenal function. Consider testing only after 3-5 days off any sublingual or oral/swallowed hormones. It should be noted that any products to be maintained (e.g. Alpha Base, OrthoMega, etc.) can be continued during *retesting* as this will represent the body's adrenal output under typical nutrient conditions going forward.

**Q:** *Will insurance cover these tests?*

**A:** Infrequently. It is recommended that the patient expect to pay out-of-pocket but also submit to their insurance provider as occasionally insurance will pay all or part of the test fee.

**Q:** *Can I mark up the tests like I do the supplements?*

**A:** It depends on the policies of your state. Many states permit this, some do not. A good strategy is to call a local hospital lab administrator and ask what is allowable in a physician's office.

**Q:** *Should I charge for a separate consultation when reviewing test results?*

**A:** Because there is extra time spent with patients to explain test results and answer questions, it is recommended that you bill for an office visit in addition to any other CPT codes. Obviously, each office and practitioner will have to decide what is best for them.

**Q:** *How do I balance this nutrition work with my typical case load?*

**A:** Consider scheduling testing/nutritional appointments on a specific day or during a block of time each day and grouping them together. This will prevent shifting mental gears frequently and allow you to focus your best energy where it is needed. Some offices will designate one staff member to administrate this program (e.g. nutritionist, MA, or CA).

## Clinical Support

Clinical support is provided free of charge for practitioners using salivary adrenal testing in conjunction with the Adrenal Recovery Program (ARK) only. Ortho Molecular and its representatives in Clinical Support do not provide case management. The sole purpose of ARK Clinical Support is to assist practitioners with understanding first the basics and then the finer points of adrenal hormone test interpretation. It is advised that before a you call to schedule a clinical support appointment you carefully read the ARK Road Map including the FAQ in the appendix to become familiar with test interpretation and perhaps to obtain answers to your questions.

If you have a question specific to a patient test and have read through the Road Map, you may call 800-332-2351 to schedule a telephone consultation. Once a time is agreed upon, it is the responsibility of the practitioner to fax a copy of the patient's test to our clinical consultant. That fax number will be given at the time of scheduling.

At the agreed upon appointment time, our clinical consultant will call the number you specify to review and answer questions regarding your test. There is a limit of two tests for review during the initial consultation and three during subsequent appointments.

Prior to your initial consultation, you may be asked to sign an acknowledgement that all information provided is for education purposes and not patient specific case management.

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