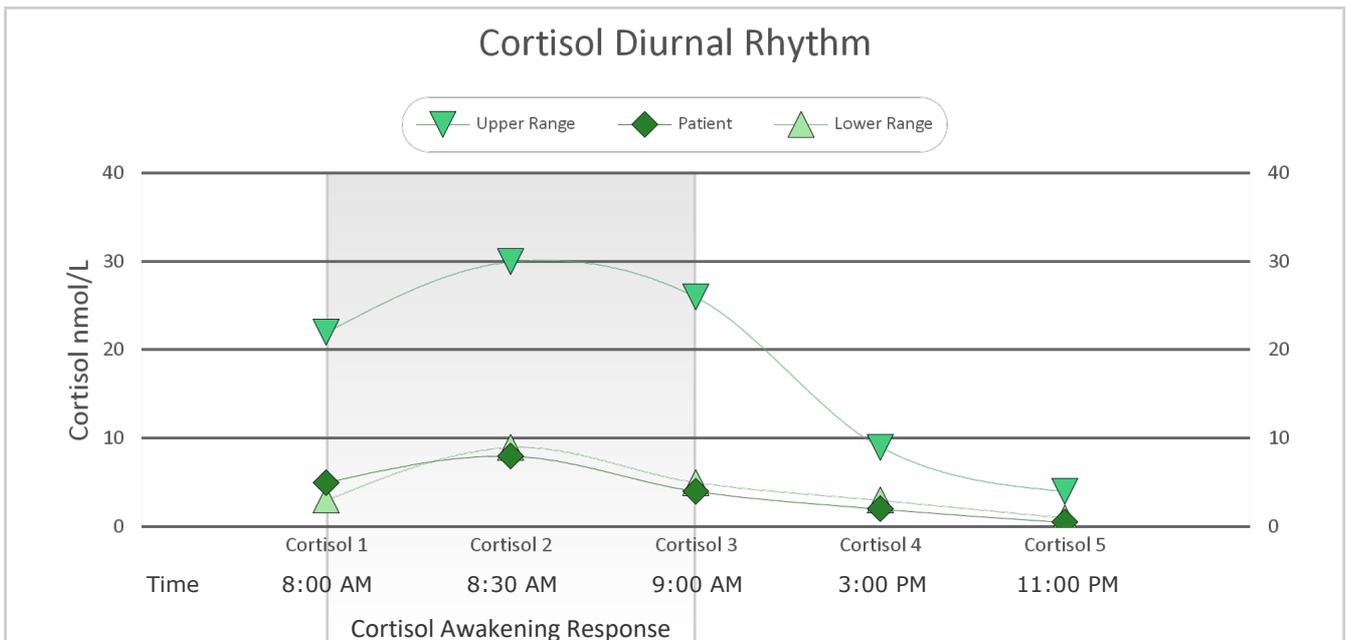
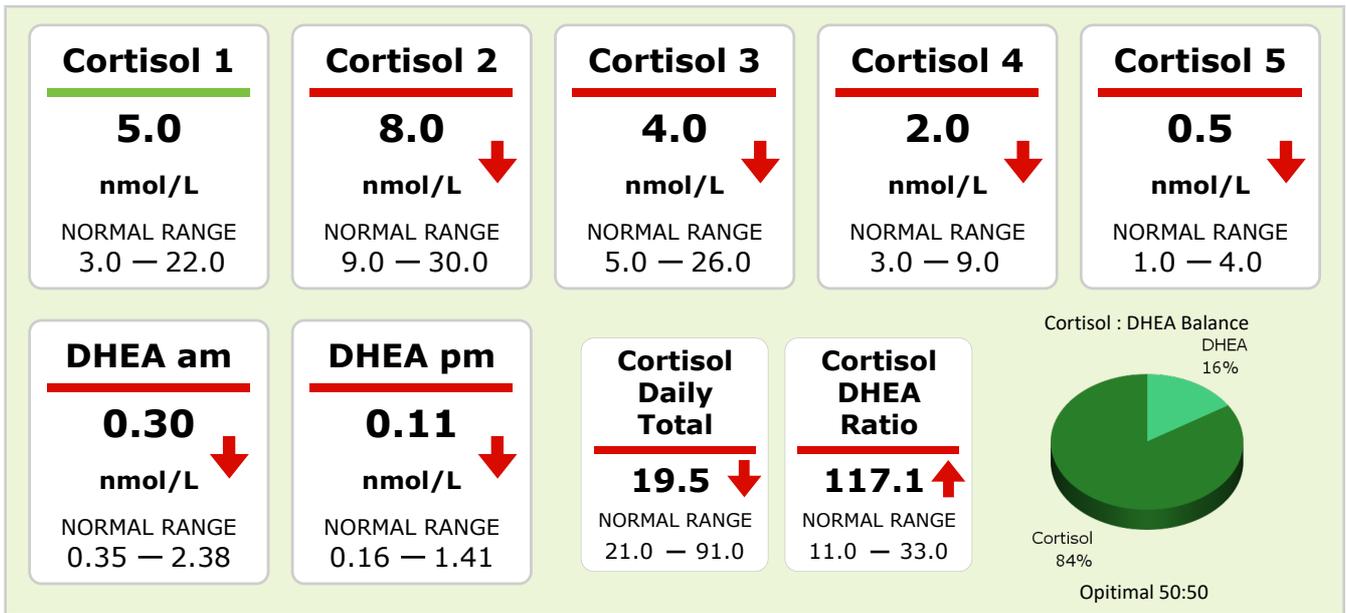




PATIENT DETAILS				CLINIC DETAILS	
PATIENT NAME:	Sample Report			Cambridge Nutritional Sciences Eden Research Park Henry Crabb Road Littleport ELY, CB6 1SE	
PATIENT ID:	0000000	SAMPLE DATE:	04/09/2017		
PATIENT DOB:	01/01/1985	SAMPLE TIME:	08:00:00		
ORDER ID:	18839	RECEIVED DATE:	07/09/2017		
TEST ID:	104596	REPORT DATE:			

ADRENAL FUNCTION PROFILE



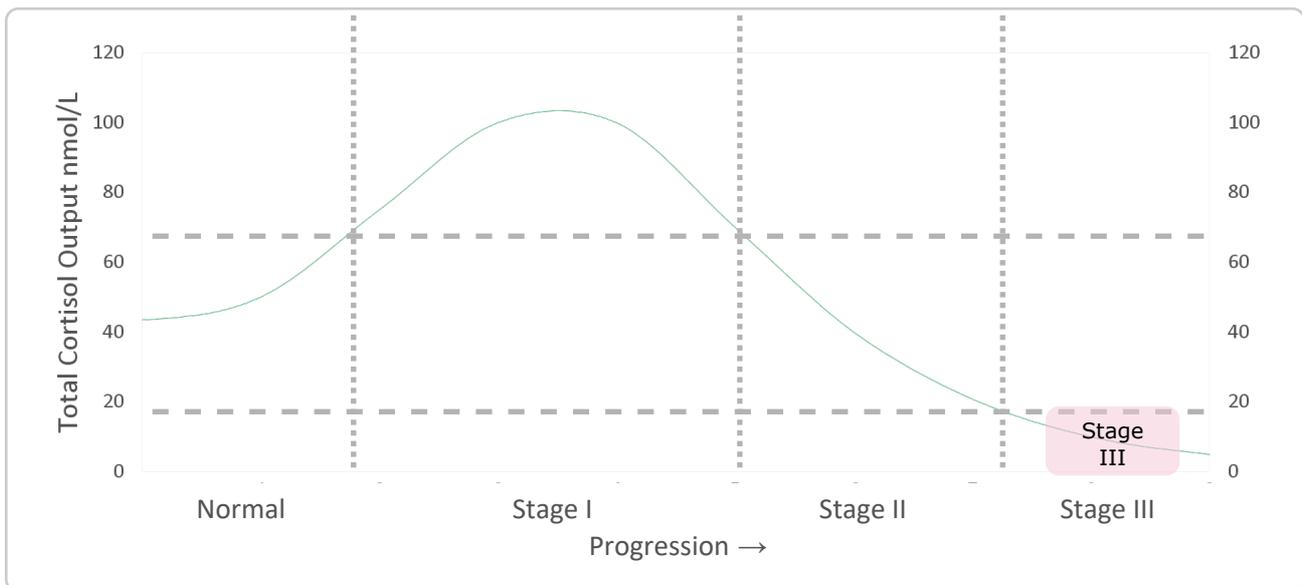
Method: ELISA Test Type: Saliva Report Printed: 07/09/2017 16:24

This test was performed using CE marked analysis kits approved for diagnostic use
Analysis Performed By: CNS an ISO 9001 and ISO 13845 certified laboratory, Laboratory Director: Dr. N.R.Abraham

STRESS EVALUATION

In the hypothalamic-pituitary-adrenal control loop (HPA axis), an increase in ACTH output from the pituitary gland stimulates the adrenal glands to release stress hormones including cortisol. The level of cortisol is regulated through the HPA negative feedback loop. 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 diagram illustrates the common pattern of cortisol through the stages of adrenal dysfunction. The total cortisol sum is shown to rise then fall as the stages of dysfunction progress left to right. **NB. This should not be confused with Addison's disease.**



Adrenal Response: Stage 3 Adrenal Hypofunction

Sometimes referred to as 'Adrenal fatigue', 'Exhaustion' or 'Burnout'. Is the terminal phase of adrenal hypofunction 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 daily cortisol levels is below normal, and DHEA is usually low. This adrenal hypofunction ultimately results in an inability by the adrenals to produce the amount of cortisol demanded by the degree of stimulation. The result is a HPA 'crash,' in which essential neuroendocrine feedback loops are unable to return the system to homeostasis. In such a case, there is often a decreased night-time cortisol output, which is a marker of late Stage 3 adrenal hypofunction.

A wide variety of seemingly unrelated symptoms usually appear; a situation which reflects the global nature of the dysfunction. Imbalances in other hormone systems are to be expected. Such adrenal hypofunction should not be confused with Addison's Disease a condition where the adrenal glands are unable to produce hormones. However, where the cortisol and DHEA results are very low it would be advisable to discuss these results with your doctor as further investigation may be necessary.

Cortisol

Cortisol is an important component of the stress response, where it protects the body through its role in enhancing vascular activity, suspending nonessential functions, inhibiting the inflammatory process, suppressing the immune system, inhibiting the actions of insulin, and increasing energy availability. Cortisol is the main glucocorticoid in humans and is produced in the zona fasciculata of the adrenal cortex. 90 % of the circulating cortisol are bound to carrier proteins and only 1–3 % are unbound. Only the latter part represents the active form of cortisol. In saliva only this free cortisol fraction is present. The level of free cortisol regulates mainly its secretion in the adrenal cortex in a negative feedback mechanism via CRH (corticotropin releasing hormone) in the hypothalamic region and the ACTH in the pituitary gland, but it is also affected by different situations above all by stress. In humans there is a physiological fluctuation of cortisol achieving the highest level in the morning and the lowest during midnight. This fluctuation of cortisol plasma level is reflected in saliva normally with a peak within the first 60 minutes after wake up. Because of the diurnal fluctuation of cortisol levels it is necessary to take several samples for an individual cortisol profile.

Cortisol Awakening Response

Cortisol 1 = 5.0 Cortisol 2 = 8.0 L Cortisol 3 = 4.0 L (nmol/L)

In this profile, Sample 2 (Post awakening) cortisol level is below the reference range. Because cortisol levels are typically at their peak shortly after awakening morning cortisol may be a good indicator of peak adrenal gland function. Low morning cortisol levels suggest a degree of adrenal hypofunction with regard to peak circadian activity.

Afternoon Response

Cortisol 4 = 2.0 L (nmol/L)

Sample 4 cortisol level is below the reference range. Afternoon cortisol levels may be a good indication of the adrenal glands' ability to help regulate blood sugar, since they represent a postprandial sample. Low afternoon levels reflect a degree of adrenal hypofunction, especially in the area of glycaemic control.

Prior to Sleep Levels

Cortisol 5 = 0.5 L (nmol/L)

Sample 5 cortisol level is below the reference range. Late-night cortisol levels may be a good indication of baseline adrenal gland function since they typically represent the lowest level during the day. Low late-night cortisol levels suggest a degree of adrenal hypofunction with regard to baseline circadian activity.

DHEA

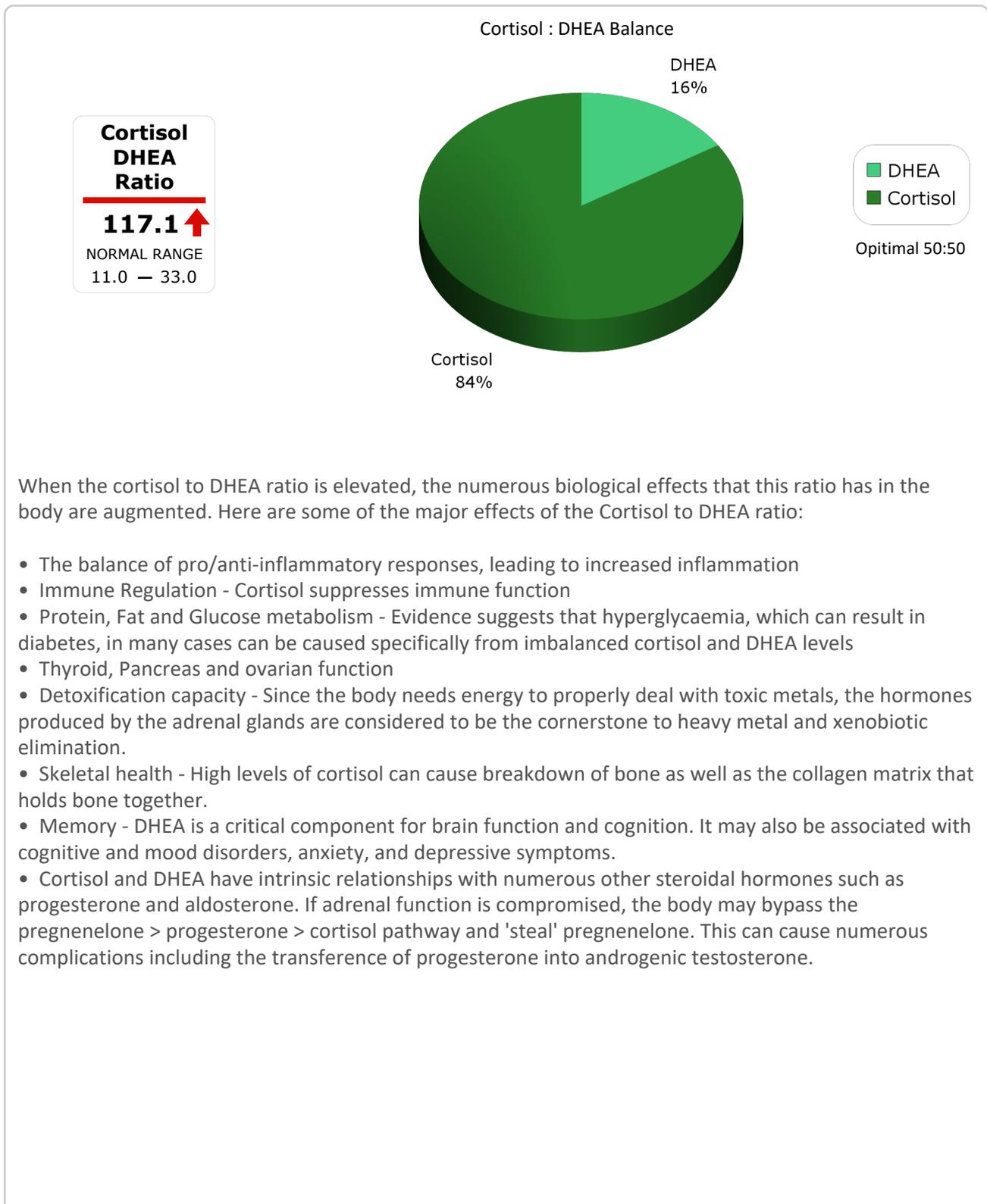
DHEA (Dehydroepiandrosterone) and its sulphate ester DHEA-S, as C-19 steroid hormones they represent the most important adrenal androgens. They are almost exclusively (96 %) produced in the adrenal cortex, Additionally, they are also produced in the gonads and in the brain. Due to quantity produced, they can be considered as the main products of human steroid biosynthesis. DHEA-S circulates in blood in 20-fold higher concentrations than any other hormone. The concentration of DHEA-S exceeds the DHEA levels by approximately 300 to 500 times. It serves as a kind of repository form of DHEA. The conversion of DHEA-S into DHEA takes place very quickly and in almost all body tissues as the corresponding enzymes are available ubiquitously. While the hydrophilic DHEA-S represents the inactive pre-hormone, the lipophilic DHEA can be reabsorbed by the cells of the peripheral tissues, converted into androgens and oestrogens and then released into circulation. Only free, non-protein-bound, DHEA can enter the cells and be converted. This is also the case for saliva, where only the free active hormone is found. Therefore, the concentration of biologically active DHEA can be measured easily and directly in saliva. The concentration of DHEA in saliva is only around 3.5% of those in sera. The normal DHEA concentration changes significantly with age: In adults, peak concentrations of DHEA within an individual are expected to be achieved between the 25th and the 39th year, followed by a slow but continuous decline until a low value around the 50th year. This age-related decline of DHEA secretion is known as "Adrenopause" and is the result of a reduction of the production of DHEA in the adrenal cortex. Due to the ubiquitous occurrence of DHEA, its determination is useful in many fields of medicine and in research. DHEA is an important stress marker in the fields of psychology and sports medicine.

DHEA am = 0.299 L DHEA pm = 0.110 L (nmol/L)

DHEA is below the reference range. Decreased DHEA levels may be seen in thyroid disorders, cardiovascular disease, obesity, reduced immunity, rheumatologic diseases, and excess cortisol production, or with administration of pharmacological doses of glucocorticosteroids. Low DHEA levels are indicative of a lowered capacity to endure physiological or psychological stress/trauma/injury, and may present with abnormal immune response, with increased incidence of autoimmune disease.

CORTISOL : DHEA RATIO

When cortisol and DHEA are in the correct ratio—determinable by lab testing—the negative effects of high cortisol/low DHEA are avoided.



SYMPTOMS OF HIGH CORTISOL LEVELS	SYMPTOMS OF ADRENAL INSUFFICIENCY (LOW CORTISOL LEVELS)
<p>Wired or fatigued High blood pressure Hyperglycaemia Worsening memory and concentration Difficulty sleeping (insomnia) Decreased sex drive Erectile dysfunction Weight gain and obesity Weakened immune response Increased gut permeability (leaky gut) Food intolerance</p>	<p>Fatigue Worsening memory and concentration Difficulty sleeping (insomnia) Sugar and salt cravings Decreased sex drive Depressed mood Weight gain Bone and muscle loss Anxiety Irritability</p>

Adrenal Glands and Their Essential Bodily Functions

