### Endocrinology Assessments

#### 28-Day Female Cycle Hormone Profile

This salivary hormone profile follows a patient's estradiol and progesterone levels over the course of a month. The test can detect irregularities in ovulation and overall hormone production. This is a helpful test for pre-menopausal women that have fluctuating hormone levels.

**Saliva Test for Estradiol, Progesterone and Testosterone**

*11 saliva samples collected on days 3, 5, 8, 11, 12, 14, 16, 18, 20, 23 and 28 of the menstrual cycle*

#### Adrenal Hormone Profile

This test looks at four urinary adrenal hormones. Long-term stress often depletes cortisol and DHEAs and can give rise to fatigue issues. The 17-Ketosteroids are the major metabolites of DHEA and testosterone and reveal that these androgens have effectively been used. The 17-Ketosteroids and total OH Corticoids are a measure of anabolism and catabolism respectively. Their ratio gives an indication of adrenal fatigue.

**Urine Test for Cortisol, DHEAs, 17-Ketosteroids, Total OH Corticoids**

*First morning void or 24 hour urine collection*

#### Adrenocortex Stress Profile

For patients with suspected adrenal fatigue (hypoadrenalism), chronic fatigue, fibromyalgia and suspected long term exposure to stress. Low adrenal function can be exacerbated by stress and menopause. The HPA Axis can respond negatively to stress, and vasomotor symptoms are often a result. Measuring DHEAs and cortisol provides a picture of how the patient manages stress. Elevated cortisol in the presence of low DHEA is neurotoxic and a significant factor in accelerated aging.

**Saliva Test for DHEAs and Cortisol**

*4 saliva samples– 8am, noon 4pm, 8pm*

#### Anabolic/Catabolic Index

The 17-Ketosteroids are the major metabolites of DHEA and testosterone and reveal that these androgens have effectively been used. The 17-Ketosteroids and total OH Corticoids are a measure of anabolism and catabolism respectively. Their ratio gives an indication of adrenal fatigue.

**Urine Test for 17-Ketosteroids, Total OH Corticoids and the Ratio**

*First morning void or 24 hour urine collection*

#### Estrogen Metabolism Index 1

2 hydroxy estrone (2OHE1) is a powerful antioxidant and its presence is beneficial. The 16α hydroxy estrone (16αOHE1) metabolite is considered the more harmful tissue proliferative OHE1 and has been shown when not controlled to represent a health risk. A decreased 2/16αOHE1 ratio is a marker of breast cancer risk, with a ratio greater than 2 being most desirable, whereas an increased 2/16αOHE1 ratio coupled with low estradiol is associated with osteoporosis risk.

**Urine Test for 2OH Estrone, 16αOH Estrone and 2/16αOH Estrone Ratio**

*First morning void*
**Estrogen Metabolism Index 2**

2 hydroxy estrone (2OHE1) is a powerful antioxidant and its presence is beneficial. The 16α hydroxy estrone (16αOHE1) metabolite is considered the more harmful tissue proliferative OHE1 and has been shown when not controlled to represent a health risk. A decreased 2/16αOHE1 ratio is a marker of breast cancer risk, with a ratio greater than 2 being most desirable, whereas an increased 2/16αOHE1 ratio coupled with low estradiol is associated with osteoporosis risk. The 4 hydroxy estrone (4OHE1) metabolite is a powerful free radical generator and has also been shown to correlate with an increased risk for breast cancer.

Urine Test for 2OH Estrone, 4OH Estrone, 16αOH Estrone and 2/16αOH Estrone Ratio  
*First morning void or 24 hour urine collection*

**Estrogen Metabolism Index 3**

2 hydroxy estrone (2OHE1) is a powerful antioxidant and its presence is beneficial. The 16α hydroxy estrone (16αOHE1) metabolite is considered the more harmful tissue proliferative OHE1 and has been shown when not controlled to represent a health risk. A decreased 2/16αOHE1 ratio is a marker of breast cancer risk, with a ratio greater than 2 being most desirable, whereas an increased 2/16αOHE1 ratio coupled with low estradiol is associated with osteoporosis risk. The 4 hydroxy estrone (4OHE1) metabolite is a powerful free radical generator and has also been shown to correlate with an increased risk for breast cancer. The methoxy estrone’s (2MeOE1 and 4MeOE1) are produced from the methylation of the 2OHE1 and 4OHE1. The level of 2 methoxy estrone (2MeOE1) has been correlated with breast cancer, with a lower level being present in breast cancer tissue. This estrogen metabolite is known to have anti-proliferative, anti-angiogenic and apoptotic properties.

Urine Test for 2OH Estrone, 4OH Estrone, 16αOH Estrone, 2MeO Estrone, 4MeO Estrone and 2/16αOH Estrone Ratio  
*24 hour urine collection*

**Female Hormone Saliva Screen 1**

This test provides a base line screen for DHEAs, estradiol, estriol, estrone, progesterone and testosterone. This test is appropriate for all women especially those with severe hormonal imbalances and those approaching menopause. The Female Hormone Saliva Screen 2 is a cheaper option only appropriate for young, slim women struggling from PMS.

Saliva Test for DHEAs, Estradiol, Estriol, Estrone, Progesterone and Testosterone  
*8am saliva sample*

**Female Hormone Saliva Screen 2**

This test provides a base line screen for DHEAs, estradiol, progesterone and testosterone. This test is a cheaper option in comparison to the Female Hormone Saliva Screen 1, but is only appropriate for young, slim women struggling from PMS.

Saliva Test for DHEAs, Estradiol, Progesterone and Testosterone  
*8am saliva sample*
Female Hormone Urine Screen

This provides a global view of the person's overall hormone milieu. For the difficult patients or the one who would like an in-depth profile to evaluate treatment efficacy, risk profile and management of aging.

Urine Test for Thyroxin (T4), Triiodothyronine (T3), T4/T3 Ratio, Cortisol, DHEAs, Testosterone, 17-Ketosteroids, Total Hydrocorticoids, 17-Ketosteroids/Total Hydrocorticoid Ratio, Growth Hormone, Pregnanediol (Progesterone Metabolite), Estrone, Estradiol, Estriol, 2OH Estrone, 16aOH Estrone, 2/16αOHE1 Ratio and 4OH Estrone.

First morning void or 24 hour urine collection

Growth Hormone

Andropause and menopause herald a time when pituitary derived growth hormone has consistently declined over preceding decades. Lack of vigour, midline fat deposition and obvious signs of aging are all indicative of growth hormone deficiency outcomes. Measuring IGF1 does not provide a full picture of growth hormone production. Only this test will do so. It also allows practitioners to track patients who are supplementing with growth hormone.

Urine Test for Growth Hormone

First morning void or 24 hour urine collection

Growth Hormone and Iodine

Iodine is an essential nutrient for humans. Every cell in the human body contains and utilizes it with higher concentration of glandular tissue. Large amounts of iodine are stored in the brain, salivary glands, breasts, ovaries, pancreas and gastric mucosa. Iodine is well known for its role in thyroid hormones synthesis. It is essential for the normal growth and development of children. In addition to this iodine deficiency is linked to endemic goiter and cretinism, endemic mental retardation, decreased fertility rate, increased perinatal death, and infant mortality.

Urine test for Growth Hormone and Iodine.

First morning void or 24 hour urine collection

Male Hormone Saliva Screen 1

This test provides a useful snapshot of the male dominant hormones, DHEAs, testosterone and estradiol. The aromatization of testosterone to estradiol is not a preferred feature of hormone metabolism and looking at the levels of estradiol will allow the practitioner to identify any potential for prostate stimulation by estrogen, so that steps can be taken to restore balance. For males with a BMI of >30 or with symptoms of estrogen dominance, we advise choosing the Male Hormone Saliva Screen 2 as estrone and estriol are often elevated due to increased body fat stores.

Saliva Test for DHEAs, Estradiol and Testosterone

8am saliva sample
<table>
<thead>
<tr>
<th>Test Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male Hormone Saliva Screen 2</strong></td>
<td>This test provides a useful snapshot of the male dominant hormones, DHEAs, testosterone, estradiol, estriol and estrone. The aromatization of testosterone to estrogen is not a preferred feature of hormone metabolism and looking at the levels of estrogen will allow the practitioner to identify any potential for prostate stimulation by estrogen so that steps can be taken to deal with it. This test is most appropriate for males with a BMI of &gt;30 or with symptoms of estrogen dominance as estrone and estriol are often elevated due to increased body fat stores.</td>
</tr>
<tr>
<td>Saliva Test for DHEAs, Estradiol, Estriol, Estrone and Testosterone</td>
<td>8am saliva sample</td>
</tr>
</tbody>
</table>

| **Male Hormone Urine Screen** | Male health is often neglected and this is a means to look at factors which determine a male’s ability to perform in a competitive environment. Testosterone, DHEAs and Cortisol are hormones depleted by stress. All these hormones are significant for males who wish to perform to a high standard, wish to manage the aging process and maintain optimal health. |
| Urine Test for Thyroxin (T4), Triiodothyronine (T3), T4/T3 ratio, Cortisol, DHEAs, Testosterone, 17-Ketosteroids, Total Hydroxycorticoids, 17-Ketosteroids/Total Hydroxycorticoid Ratio and Growth Hormone | First morning void or 24 hour urine collection |

| **Multi-choice Hormone Saliva Test** | This test provides the practitioner with freedom to select any hormones out of a possible ten offered, enabling them to create their own algorithm specific to the patient’s individual needs. |
| Saliva test for any number of hormones from the following: Androstenedione, Cortisol (8am), Cortisol (4pm), Cortisol (8pm), Cortisol (12-2am), DHEAs, Dihydrotestosterone (DHT), Estrone, Estradiol, Estriol, Melatonin (12-2am), Progesterone, Testosterone | 8am saliva sample unless otherwise stated |

| **Osteoporosis Marker** | Telopeptides are highly specific for bone resorption as they are only produced in bone and cartilage. They are released during collagen degradation and will indicate the rate of bone turnover in a patient. This is a useful test for screening patients for osteoporosis and can be used to monitor dietary and lifestyle interventions. |
| Urine Test for Urinary Telopeptides | First morning void |

| **Pregnenolone** | Pregnenolone is often described as the ‘Grandfather’ hormone as it is the first steroid hormone produced from cholesterol in the mitochondria. Pregnenolone can then be made into DHEA or progesterone and further metabolised into the other steroid hormones. Pregnenolone deficiencies can give rise to poor memory, immune disorders and high cholesterol. This test can be used to diagnose a deficiency or monitor supplementation. |
| Blood Test for Pregnenolone | Serum or whole blood centrifuged in a SSTP tube |
Reverse T3
Ideal for patients that have symptoms of hypothyroidism but have adequate T4 and T3 levels. Reverse T3 (rT3) is produced as a by product of T4-T3 conversion when selenium and/or zinc are deficient or under other stress conditions. RT3 binds to the receptor, lacks biological function and blocks any normal T3 present.

Blood Test for Reverse Triiodothyronine (T3)
Serum or whole blood centrifuged in a SSTP tube

Sleep Cycle Hormone Saliva Screen
The modern living environment sees high numbers of the population who have difficulties with sleep interruption, deprivation and inability to experience REM sleep. This can affect health and performance. Prescribing a pharmaceutical is an option but it is now possible to evaluate whether sleep loss is caused by suboptimal melatonin or elevated cortisol levels. This test is a gateway to addressing a significant cause of sleep loss.

Saliva Test for Melatonin and Cortisol
12-2am saliva sample

Thyroid Panel
This convenient urine test measures free thyroid (T4 and T3) hormone levels. The report also gives the T4:T3 ratio, which gives an indication to whether T4 production or T4-T3 conversion, needs to be targeted with nutritional or pharmaceutical therapy.

Urine Test for Thyroxin (T4), Triiodothyronine (T3) and T4:T3 Ratio
First morning void or 24 hour urine collection

Urinary Estrogens
Estrogen deficiencies give rise to many symptoms such as hot flushes, vaginal atrophy and memory loss. This test can diagnose an estrogen deficiency as well as monitor boidentical estrogen supplementation. Urinary hormone testing has the advantage over blood tests that it assays only the biologically active hormones and therefore correlates better with symptoms.

Urine Test for Estrone (E1), Estradiol (E2), Estriol (E3)
First morning void or 24 hour urine collection

Urinary Estrogens and Metabolites
Estrogen deficiencies give rise to many symptoms such as hot flushes, vaginal atrophy and memory loss. This test can diagnose an estrogen deficiency as well as monitor boidentical estrogen supplementation. Urinary hormone testing has the advantage over blood tests that it assays only the biologically active hormones and therefore correlates better with symptoms. 2 hydroxy estrone (2OHE1) is a powerful antioxidant and its presence is beneficial. The 16α hydroxy estrone (16αOHE1) metabolite is considered the more harmful tissue proliferative OHE1 and has been shown when not controlled to represent a health risk. A decreased 2/16αOHE1 ratio is a marker of breast cancer risk, with a ratio greater than 2 being most desirable, whereas an increased 2/16αOHE1 ratio coupled with low estradiol is associated with osteoporosis risk. The 4 hydroxy estrone (4OHE1) metabolite is a powerful free radical generator and has also been shown to correlate with an increased risk for breast cancer.

Urine Test for Estrone (E1), Estradiol (E2), Estriol (E3), 2OH Estrone, 4OH Estrone, 16αOH Estrone
First morning void or 24 hour urine collection
Urinary Estrogens and Progesterone

Estrogen and progesterone deficiencies often occur prior to menopause and give rise to the symptoms experienced during this phase of life. Estrogen and progesterone have protective properties in the body and therefore ensuring optimal levels will help maintain good health. Urinary hormone testing has the advantage over blood tests that it assays only the biologically active hormones and therefore correlates better with symptoms.

Urine Test for Estrone (E1), Estradiol (E2), Estriol (E3) and Progesterone (Pregnanediol)
First morning void or 24 hour urine collection

Gastrointestinal Assessments

1-Day Stool Parasitology

This test investigates the presence of parasites in a stool sample using both microscopic investigations and enzyme immunoassay (EIA). The EIA uses sensitive and specific antibodies against Cryptosporidium, Giardia lamblia and Enamoeba histolitica.

Stool test for Parasites using Microscopy and Enzyme ImmunoAssay (EIA)
Stool sample

Calprotectin

This non-invasive diagnostic tool will help differentiate between Irritable Bowel Syndrome (IBS) and Inflammatory Bowel Disease (IBD). Despite differences between the disorders, misdiagnosis is common. Since their prognosis and treatment differ enormously, distinguishing between IBS and IBD is therefore clinically very important. Faecal Calprotectin can identify between the two disorders, as it is a surrogate marker of neutrophil influx into the bowel lumen, intestinal inflammation and therefore IBD. Faecal Calprotectin has been shown to correlate with endoscopic and histological grading of disease activity in IBD.

Stool test for Faecal Calprotectin
Stool sample
### Comprehensive Digestive Stool Analysis

The Comprehensive Digestive Stool Analysis is an advanced non-invasive diagnostic tool that can help practitioners identify the underlying cause of gastrointestinal imbalance and help target treatment strategies. The stool test evaluates digestion and absorption, bacterial balance and metabolism, yeast and immune status and offers susceptibility testing for botanical and antimicrobial agents.

**Comprehensive Digestive Stool Analysis: please note that 8 new panels are now available.**

**CDSA Level 1:** Tests for Macroscopy, Microscopy, Bacteriology, Fungal and Parasitology

**CDSA Level 2:** Macroscopy, Microscopy, Digestion, Absorption, Metabolism, Bacteriology, Fungal and Parasitology

**CDSA Level 3:** Macroscopy, Microscopy, Digestion, Absorption, Metabolism, Bacteriology, Fungal, Parasitology and sensitivities

**CDSA Level 3+:** Macroscopy, Microscopy, Digestion, Absorption, Metabolism, Bacteriology, Fungal, Parasitology, inflammation, tumour/ulcer and sensitivities

**CDSA Level 4:** Macroscopy, Microscopy, Digestion, Absorption, Metabolism, Bacteriology, Fungal, Parasitology EIA and sensitivities

**CDSA Level 4+:** Macroscopy, Microscopy, Digestion, Absorption, Metabolism, Bacteriology, Fungal, Inflammation, tumor/ulcer, Parasitology, Parasitology EIA and sensitivities

**CDSA Level 5:** Macroscopy, Microscopy, Bacteriology, Fungal, Parasitology, Parasitology EIA and sensitivities

**Faecal Parasitology**

Parasitology and Parasitology EIA

**Stool sample**

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**Faecal Transglutaminase IgA**

Marker for Coeliac Disease

**Stool sample**

**Helicobacter Pylori Stool Antigen**

Helicobacter Pylori is known to be a causative factor in gastritis, peptic ulcers and gastric malignancy. This non-invasive diagnostic tool employs antibodies which are highly specific and sensitive (96%) for the identification of H. Pylori.

Stool test for Helicobacter Pylori Antigen’s

**Stool sample**
### Intestinal Permeability

An increased permeability of the small intestine causes malnutrition and malabsorption. This test can diagnose this “Leaky Gut” by directly measuring the ability of 2 non-metabolised sugar molecules; mannitol and lactulose, to permeate the intestinal mucosa.

**Urine Test for Mannitol, Lactulose and the Mannitol:Lactulose ratio**

**Six hour urine collection**

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2PK Pyruvate Kinase</td>
<td>The majority of human tumours strongly over-express the tumour M2 isoform of the glycolytic enzyme Pyruvate Kinase (M2PK). M2PK is the key regulator of tumour metabolism and its measurement in faeces identifies gastrointestinal tumours, even in the absence of gastrointestinal bleeding.</td>
</tr>
<tr>
<td>Stool test for a marker for Gastric Tumours</td>
<td><strong>Stool sample</strong></td>
</tr>
<tr>
<td>Pancreatic Elastase</td>
<td>Pancreatic Elastase is used to assess pancreatic exocrine function. Pancreatic insufficiency is associated with diabetes mellitus, cholelithiasis, pancreatic tumour, cystic fibrosis and osteoporosis. This test is not affected by substitution therapy with enzymes of animal origin.</td>
</tr>
<tr>
<td>Stool test for a marker of Pancreatic Insufficiency</td>
<td><strong>Stool sample</strong></td>
</tr>
<tr>
<td>Salivary Candida Antibodies</td>
<td>This test looks for two types of antibody specific to Candida (IgG + IgA). A positive result demonstrates that the individual has had an immune reaction to Candida. A positive test for IgG shows there has been a past infection, whereas a positive result for IgA reveals a current or very recent infection.</td>
</tr>
<tr>
<td>IgA and IgG Candida Antibodies</td>
<td><strong>Saliva sample</strong></td>
</tr>
<tr>
<td>Secretory IgA</td>
<td>Deficiencies or low levels of secretory IgA may be associated with asthma, autoimmune disease, high stress levels, high antibiotic use, candidiasis, Coeliac Disease, autism, food allergies/intolerances, Ulcerative Colitis and Crohn's Disease. SIgA provides the first line of defence against bacteria, food residues, fungi, parasites and viruses.</td>
</tr>
<tr>
<td>Secretory IgA</td>
<td><strong>Saliva sample</strong></td>
</tr>
</tbody>
</table>

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**Call 0800 HORMONE (467 6663) to speak to Jo-Anne Moore, Diagnostic Co-ordinator**

62C Diana Drive, Wairau Valley, North Shore 0627, PO Box 101-142, North Shore Mail Centre 0745, Auckland, New Zealand

Ph: 64 9 442 1727  Fax: 64 9 442 5851

Email: info@pharmaceutical.co.nz  Website: www.pharmaceutical.co.nz

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Immunological Assessments

### IgG Food Allergy Panel

A feature of chronic food intolerance and allergy is that it is often hard to evaluate the causative food agents. Rotation diets will sometimes help identify food intolerance but is very time consuming. This panel screens 96 individual foods and will provide information on antibody response to common food groups. From the results a rotation diet will be specially designed for your patient.

Delayed sensitivities to 96 foods including common Dairy Products, Fish/Crustacea/Mollusk, Vegetables, Grains/Legumes/Nuts, Fruits and Meats

**Blood spot (collectable at home)**

Metabolic Assessments

### Comprehensive Oxidative Damage Markers

Free radicals damage the body which results in aging and sickness including cancer. This comprehensive test determines the body’s level of oxidative damage analysing the damage that has occurred in proteins, muscle, membranes and DNA.

Comprehensive Oxidative Damage Markers test includes:

- **Protein Damage Marker**
  - Blood Test for Carbonyl Proteins
    - *Whole blood centrifuged in an EDTA tube*

- **Muscle Mass Damage Marker**
  - Urine Test for Allantoin
    - *First morning void*

- **Membrane Damage Marker**
  - Blood Test for MDA
    - *First morning void*

- **DNA Damage Marker**
  - Urine Test for 8-Hydroxy-d Guanosine
    - *First morning void*

**Cytokines, Basic Panel**

Cytokines are inflammatory destructive cell-signaling chemicals that contribute to the progression of many degenerative diseases. People suffering from chronic disease often have elevated levels of cytokines. These cytokine tests will enable the practitioner to prescribe therapies that specifically target the inflammatory cytokine responsible for the poor state of health.

Blood Test for IL-1, IL-6, IL-10, TNFα

*Either serum or blood centrifuged in a SSTP tube*

**Cytokines, Extensive Panel**

Cytokines are inflammatory destructive cell-signaling chemicals that contribute to the progression of many degenerative diseases. People suffering from chronic disease often have elevated levels of cytokines. These cytokine tests will enable the practitioner to prescribe therapies that specifically target the inflammatory cytokine responsible for the poor state of health.

Blood Test for IL-1, IL-2, IL-4, IL-5, IL-6, IL-10, IL-13, TNFα, TNFβ, TGFB

*Either serum or blood centrifuged in a SSTP tube*
**DNA Oxidative Damage Test (8-OH-dG)**

DNA may be damaged by attack from free-radicals. The water-soluble 8-Hydroxy-d-Guanosine (8-OH-dG) is a by-product of the repair process which fixes this specific DNA damage. Therefore the level of 8-OH-dG in the urine is proportional to the level of free-radicals and thus oxidative stress in the body.

Urine test for 8-Hydroxy-d Guanosine

*First morning void or 24 hour urine collection*

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**Environmental Pollutants**

This test is ideal for assessing patients who may have been exposed to environmental pollutants. The test analyses the presence of urinary organic acids which are derived from the metabolic conversion of common pollutants. Metabolites from xylene, toluene, benzene, trimethylbenzene, phthalate as well as urban pollution are examined.

Urine Test for Pollutant Derived Urinary Metabolites

*First morning void*

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**Intestinal Dysbiosis Organic Acid Profile**

Gut dysbiosis caused by candida and other pathogenic microbials are often hard to diagnose and treat. This organic acid profile detects the metabolites specifically produced by the microorganisms which cause dysbiosis. This test can be used to diagnose the cause of the dysbiosis as well as to monitor therapy.

Urine Metabolites

*First morning void*

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**Liver Detoxification Profile**

One of the body’s primary defence mechanisms is the neutralization of toxins (from a leaky gut, toxic chemicals, environmental pollutants and endotoxins) and their safe elimination from the body. This challenge is primarily met by the liver, which neutralizes the threat of toxin-induced damage by using oxidation, reduction or hydrolysis (Phase 1) and conjugation (Phase 2) to neutralize the toxins. The Liver Detoxification Profile (LDP) is a panel of non-invasive diagnostic tests that assesses the capacity of the body’s multiple pathways to detoxify and eliminate toxic chemicals. The information gained allows the assessment of the liver’s ability to manage a toxic burden, monitor cumulative compromise to liver detoxification functions, appraise the risk of free radical damage where detoxification capacity is reduced and assess the progress of detoxification programs.

Test to determine the liver’s ability to process aspirin, paracetamol and caffeine

*Urine and Saliva Sample*
### Organic Acids

This is a test that can assist with an evaluation of complex disorders where, although the clinical picture is known, the patients test results do not reveal any aberrations or pathology with standard diagnostic testing from conventional laboratories available in New Zealand. This test brings new tools to the practitioner. Urinary organic acids derived from the metabolic conversion of dietary proteins, fats and carbohydrates, in addition to compounds of bacterial origin, provide a unique chemical profile of the patient’s cellular health. Key metabolic markers of cellular physiology are quantified to assess for compromised energy production, neurotransmitter metabolism, nutrient deficiencies and intestinal dysbiosis.

Urine Test for 40 Urinary Metabolites  
*First morning void*

### Oxidative Damage Markers

Free radicals damage the body which results in aging and sickness including cancer. This comprehensive test determines the body’s level of oxidative damage analysing the damage that has occurred in proteins, muscle, membranes and DNA.

- **Protein Damage Marker**  
  Blood Test for Carbonyl Proteins  
  *Whole blood in an EDTA tube*

- **Muscle Mass Damage Marker**  
  Urine Test for Allantoin  
  *First morning void*

- **Membrane Damage Marker**  
  Blood Test for MDA  
  *First morning void*

- **DNA Damage Marker**  
  Urine Test for 8-Hydroxy-d Guanosine  
  *First morning void*

### Neuroendocrine Assessments

#### Histamine Test

This test helps to ascertain the underlying cause of your patient’s mood disturbances. Both low (histapenia) and high levels (histapelia) of histamine are known to be associated with behavioural disorders. This test is suitable to be used in conjunction with Neuroendocrine Metabolites and Kryptopyrrole test, for a truly comprehensive assessment of neurological function.

- **Blood Test for Histamine**  
  *Whole blood in a Heparin tube*
Kryptopyrroles

This test can assist in the evaluation of the underlying cause of mood disturbances in your patients. The Kryptopyrrole test ascertains whether pyroluria is present, a disorder which results in a decrease of vitamin B and zinc levels in the body, and is associated with depression and mood disturbances.

Urine Test for Kryptopyrroles
Second morning void

Neuroendocrine Metabolites

An ideal assessment to ascertain the underlying cause of your patient’s depression. This test will determine whether the imbalances are caused by a deficiency or overabundance of adrenaline, dopamine, noradrenalin and/or serotonin. The activity of catechol-O-methyl transferase (COMT) is also evaluated.

Urine Test for Adrenalin, Dopamine, Noradrenaline and Serotonin Metabolites as well as COMT activity
First morning void or 24 hour urine collection

AA/EPA Ratio

There is a lot of interest on the relationship between two particular essential fatty acids, arachidonic acid (AA) and eicosapentanoic acid (EPA). Maintaining an optimal balance of the precursors of the pro-inflammatory eicosanoids (derived from AA) and the anti-inflammatory eicosanoids (derived from EPA) in the body helps in the prevention and management of many disorders, especially chronic and inflammatory diseases and heart disease. The ideal AA:EPA ratio of 1.5. The average AA:EPA of the Western Diet is approximately 11, and patients with inflammatory conditions and neurological disorders, the ratio is in excess of 20.

AA/EPA Ratio
Blood spot sample

Amino Acid Profile; Blood

26 Plasma Amino Acids: 1-Methylhistidine, Alanine, Arginine, Asparagine, Aspartic Acid, Citrulline, Cysteine, GABA, Glutamic Acid, Glutamine, Glycine, Histidine, Hydroxylysine, Hydroxyproline, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Ornithine, Serine, Threonine, Tryptophan, Tyrosine and Valine

Whole blood in a heparin tube

Amino Acid Profile; Urine

This test is particularly valuable for evaluating Gastrointestinal Function, Cellular Energy Production, Detoxification, Neurotransmitter Metabolism, Muscle Catabolism, Collagen Turnover, Nutritional Markers and Vascular Function, amongst others. Urine amino acid analysis reflects metabolic activity over the period of collection. For evaluation of overall amino acid body status, plasma testing emerges as the method of choice.

21 Urinary Amino Acids: Alanine, Arginine, Asparagine, Aspartic Acid, Cysteine, Glutamic Acid, Glutamine, Glycine, Histidine, Isoleucine, Leucine, Lysine, Methionine, Phenylalanine, Proline, Serine, Taurine, Threonine, Tryptophan, Tyrosine and Valine

24 hour urine collection
Antioxidant Factors
Free radical damage is implicated in many diseases such as cancer, age-related macular degeneration and neurodegenerative diseases. This test detects 11 antioxidants in urine and can be used to monitor patient antioxidant requirements.

Blood Test for Retinol, β-Carotene, α-Carotene, Lycopene, Luteine, Zeaxanthine, Cryptoxanthine, α-Tocopherol, δ-Tocopherol, Ascorbic Acid, CoQ10
*Whole blood collected in a SSTP tube*

Essential Fatty Acids
Essential fatty acids were given their name because they are essential to normal growth and development. In the typical New Zealand diet at present, there is an overabundance of Omega 6 with a deficiency in Omega 3. It is important to maintain an appropriate balance of omega-3 and omega-6 in the diet as these two substances work together to promote health. Omega 6 is pro-inflammatory and omega 3 is anti-inflammatory. In addition, omega 3 is important for normal brain development and mental health.

Blood Test for Essential Fatty Acids (Saturated, Omega 9, Omega 6 and Omega 3) with ratio’s reported
*Whole blood in an EDTA tube*