HIGH PERFORMANCE & UNIQUE TESTS

DESIGNED TO MEET THE NEEDS OF YOUR LABORATORY
HIGH PERFORMANCE & UNIQUE TESTS
Cardiology and Lipids | Diabetes | Renal Function | Antioxidants | Clinical Chemistry
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KEY

UF
UNIQUE FEATURE
When you see this symbol you will know that this feature is unique to the Randox product

NP
NICHE PRODUCT
When you see this symbol you will know that Randox have one of the only automated biochemistry assays available on the market
BENEFITS OF RANDOX REAGENTS

Randox offers an extensive range of third party diagnostic reagents which are internationally recognised as being of the highest quality; producing accurate and precise results.

We offer a test menu of 113 assays, covering over 100 disease markers including: antioxidants, diabetes, drugs of abuse testing, lipids, specific proteins, therapeutic drug monitoring and veterinary testing.

A wide range of formats and methods are available providing greater flexibility and choice for any laboratory size.

In addition to flexible pack sizes and a comprehensive list of analyser applications, we can also provide dedicated reagent packs (Randox Easy Read and Easy Fit reagents) for a wide range of clinical chemistry analysers providing you with freedom of choice from an independent manufacturer.

EXPAND YOUR TEST MENU WITHOUT EXPANDING YOUR LAB
There is no need to buy any extra equipment in order to expand your test menu. Our reagents can be programmed onto the majority of the most common biochemistry analysers.

EXPAND ROUTINE TESTING
With speciality assays for 195 of the most common clinical chemistry analysers; assays which usually require dedicated equipment (or was previously only available as an ELISA) can now be run on automated biochemistry analysers, allowing your laboratory to expand its routine test menu. E.g. TxBCardio™, cystatin C, adiponectin, and many more.

REDUCE LABOUR
Reduce time with liquid ready-to-use reagents, automated methods (compared to the traditional, laborious ELISA methods used for tests such as cystatin C or adiponectin); and our easy-fit options.

REDUCE COSTS
We can help create cost-savings for your laboratory through excellent reagent stability; by eliminating the need for costly re-runs through the excellent quality of products; and by offering a range of kit sizes (including smaller kit sizes for niche tests to reduce waste).

REDUCE THE RISK OF ERRORS AND HAVE CONFIDENCE IN PATIENT RESULTS
Our traceability of material and extremely tight manufacturing tolerances ensure uniformity across reagent batches reducing lot-to-lot variability. All our assays are validated against gold-standard methods; giving you the confidence that you are sending out the correct patient results.
01 CARDIOLOGY AND LIPIDS

Lipoprotein(a) - Lp(a)

Cat. No:  LP2757  R1 1 x 30ml, R2 1 x 15ml
         AO2799  R1 4 x 6.5ml, R2 4 x 33.5ml
         AO8154  R1 1 x 8.7ml, R2 1 x 8.7ml

Elevated levels of Lipoprotein(a), Lp(a), are considered to be both a causal risk factor and independent genetic marker of atherosclerotic disorders. The major challenge associated with Lp(a) measurement is the size variation of apo(a) within Lp(a). Dependent upon the size of apo(a) in the assay calibrator, many assays underestimate apo(a) size in the patient sample.

Numerous commercially available products suffer apo(a) size related bias, resulting in an over estimation of Lp(a) in samples with large apo(a) molecules and an under estimation in samples with small apo(a) molecules. The antibody used in the Randox method detects the complete Lp(a) molecule providing accurate and consistent results. This was proven by the IFCC who developed a gold standard ELISA reference assay and compared 22 commercially available tests. The Randox Lp(a) method displayed the least (minimal) amount of apo(a) size related bias, proving it to be a superior offering.

Randox Lp(a)

- Automated immunoturbidimetric assay offering a more convenient and time efficient method for Lp(a) measurement compared to traditional ELISA based testing
- Liquid ready-to-use reagents for convenience and ease of use
- Stable until expiry when stored at +2 - +8°C
- Applications available detailing instrument-specific settings for a wide range of analysers
- Lp(a) controls and calibrator available

Adiponectin is a protein hormone, produced and secreted by fat cells (adipocytes), which is normally found in reasonably high concentrations within the blood. Adiponectin regulates the metabolism of lipids and glucose and influences the body’s response to insulin and inflammation.

It has an important role in a number of metabolic processes such as glucose regulation and fatty acid oxidation. Low adiponectin levels have been linked with several pathologies including metabolic syndrome, type 2 diabetes mellitus (T2DM), cancer and cardiovascular disease.

Adiponectin

Cat. No:  AO2999  R1 2 x 15.8ml, R2 2 x 8.4ml
         AO2799  R1 4 x 65ml, R2 4 x 33.5ml
         AO8154  R1 1 x 8.7ml, R2 1 x 8.7ml

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Heart–type Fatty Acid Binding Protein - H-FABP

H-FABP is a low molecular-weight (15kD) cytoplasmic protein that is involved in the intracellular uptake and buffering of free fatty acids in the myocardium.

H-FABP is a highly sensitive and early risk marker of acute coronary syndrome, detectable as early as 30 minutes following the onset of an ischemic episode. H-FABP concentrations peak at approximately 6-8 hours and return to normal within approximately 24-30 hours. Although H-FABP has similar release kinetics to Myoglobin, it is approximately 15-20 times more cardiac specific, making it a more effective marker of myocardial infarction.

Randox H-FABP

- A unique assay, the Randox H-FABP assay is the world’s first CE marked automated biochemistry test for the detection of Heart-type Fatty Acid Binding Protein
- Highly sensitive as the H-FABP protein is detectable as early as 30 minutes from the onset of an ischemic episode
- Liquid ready-to-use reagents for ease of use and convenience
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Immunoturbidimetric method
- H-FABP controls and calibrator available

Fig. 2. The comparison of H-FABP and Troponin release after MI
sPLA₂-IIA is a family of pro-inflammatory enzymes linked to the formation and destabilization of atherosclerotic plaques. The sPLA₂ protein expression increases with atherosclerotic lesions.

sPLA₂-IIA is a cardiovascular biomarker, which aids in prediction of coronary risk and in the prognosis of patients across different cardiac risk groups. It is a strong predictor of adverse outcomes, including: cardiovascular disease, myocardial infarction, stroke and heart failure.

Randox sPLA₂-IIA

- Liquid ready to use reagents for convenience and ease of use
- Immunoturbidimetric method
- Value assigned controls and calibrators available offering a complete testing package
- Applications available detailing instrument-specific settings for the convenient use of the Randox sPLA₂-IIA assay on a wide range of clinical chemistry analysers

COMING SOON FROM RANDOX

Small-dense LDL Cholesterol (sdLDL-C) is a subtype of LDL cholesterol. All LDL transports triglycerides and cholesterol to bodily tissues but their atherogenicity varies according to size. Smaller particles such as sdLDL-C can permeate the inner arterial wall more readily and are more susceptible to oxidation, making sdLDL-C particularly atherogenic. Research has shown individuals with a predominance of sdLDL-C have a three-fold increased risk of suffering from a heart attack, making sdLDL-C measurement extremely valuable. sdLDL-C is a valuable screening tool of CVD risk.

Randox sdLDL-C

- Rapid analysis as results can be produced in as little as ten minutes, facilitating faster patient diagnosis and treatment plan implementation
- Direct, automated test as the Randox sdLDL-C assay is specifically designed for use on automated analysers making the test more convenient and efficient
- Liquid ready-to-use reagents for ease of use and convenience
- Applications available detailing with instrument-specific settings for a wide range of analysers
- Clearance method
- Dedicated sdLDL-C control and calibrator available

Fig. 3. Size matters: The true weight of risk in lipid profiling
Aspirin is the foundation of antiplatelet therapy and is widely prescribed in the primary and secondary prevention of cardiovascular disease. However, not all patients receiving aspirin therapy respond in the same way with many displaying signs, to varying degrees, of aspirin resistance. Clinical research has shown that patients who have a sub-optimum response to their aspirin therapy are over three times more likely to die from a heart attack or stroke than those who respond positively to such therapy. Up to 30% of patients on low dose aspirin therapy are affected by aspirin “resistance”.

The Randox TxBCardio™ assay can be used as a tool to identify patients exhibiting aspirin resistance. Results generated by the Randox TxBCardio™ assay can be used to enable timely intervention by clinicians with patients deemed to be at increased risk. Patient management can then be altered via improved patient compliance, increased aspirin dosage levels and/or combination therapies with other drugs.

Randox TxBCardio™

- Highly accurate method for the analysis of TxA₂ in patients as the Randox TxBCardio™ assay specifically measures 11dhTxBl₂, 11dhTxBl₂ is the most abundant metabolite of TxA₂
- Automated latex-enhanced immunoturbidimetric assay facilitating aspirin therapy testing on a number of automated clinical chemistry analysers and eliminating the need for dedicated equipment
- Rapid analysis in as little as ten minutes. The Randox TxBCardio™ assay offers a more convenient, efficient option for the evaluation of aspirin resistance
- Liquid ready-to-use reagents for convenience and ease of use
- TxBCardio™ controls and calibrator available

Aspirin effect correlates to low urinary 11dhTxBl₂

Lack of Aspirin effect correlates to high urinary 11dhTxBl₂

Fig. 4. The correlation of aspirin effect and urinary 11dhTxBl₂
HDL comprises of several subclass particles, which differ in their sizes, densities and components. These HDL subclasses are considered to play different roles in the progression and regression of arteriosclerosis. HDL is the scavenger of cholesterol within the arterial walls. If HDL3 Cholesterol is present in lower than normal concentrations, the ability to remove this cholesterol is reduced. Therefore it is widely accepted that there is an inverse correlation between HDL3 Cholesterol and CVD risk. Evidence from analysis of the TRIUMPH study of 2,465 acute MI patients, and IHCS study of 2,414 patients who underwent coronary angiography, determined that HDL3 was independently associated with a 50% greater risk for MI in each study.

Randox HDL2/3
- Liquid ready-to-use reagents for convenience and ease of use
- Available on most automated biochemistry analysers via the use of instrument-specific applications
- Allows for quantification of HDL2-C by the subtraction of HDL3-C from total HDL-C
- A 2 step procedure based on patented technology from Denka Seiken
- Open vial stability of 28 days when stored at +2 to +8°C
- Measuring range of 4 - 60mg/dl for the measurement of clinically important results
- A strong correlation with the conventional Ultracentrifugation Method
- Measures total HDL3
- HDL3 controls and calibrator available offering the complete testing package

Homocysteine
- Limited interference from Bilirubin, Haemoglobin, Triglycerides and Intralipid®, producing more accurate and precise results
- Two-reagent format for convenience and ease of use
- Calibrator provided with kit simplifying the ordering process
- Liquid ready-to-use reagents for optimum user convenience
- Excellent linearity of 47.9 μmol/L, ensuring abnormally high levels of homocysteine are detected
- Enzymatic method
- Tri-level cardiac control available

Apolipoprotein C-II
- Liquid ready-to-use reagents for convenience and ease of use
- Excellent sensitivity of 1.48 mg/dl, ensuring depleted levels of Apo C-II are detected
- Limited interference from Bilirubin, Haemoglobin, Intralipid® and Triglycerides for truly accurate results
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Immunoturbidimetric method
- Apolipoprotein controls and calibrator available

Homocysteine is a thio-containing amino acid produced by the intracellular demethylation of methionine. Homocysteine is an independent risk factor for cardiovascular disease. High levels of homocysteine (hyperhomocysteinemia) leads to artery endothelial cell damage and reduced vessel flexibility. Research suggests the negative effect of hyperhomocysteinemia on the artery cell wall may increase an individual’s risk of developing atherosclerosis. Elevated levels of homocysteine can be associated with various disease states including cardiovascular disease, diabetes, dementia, osteoporosis and complications during pregnancy; making homocysteine an essential addition to a laboratory’s testing panel.

Homocysteine
- Cal. No: HY4036
- R1 2 x 21.7ml, R2 2 x 4.6ml

Apolipoprotein C-II (Apo C-II) is an amino acid protein synthesised mainly in the liver and to a lesser extent in the intestine. Apo C-II acts as a co-factor for lipoprotein lipase; an enzyme that hydrolysates triglycerides in chylomicrons and VLDL. Patients have been identified with excessive hypertriglyceridemia due to a deficiency in Apo C-II which leads to an increased risk of the patient developing coronary artery disease. Additional disease states associated with Apo C-II deficiency include chylomicronemia, xanthomas and recurrent pancreatitis.
Apolipoprotein E

Cat. No: LP3864

R1 2 x 11ml, R2 2 x 5ml

Apolipoprotein E (Apo E) is an amino acid protein synthesised mainly in the liver but also in the brain, spleen, lungs, adrenals, ovaries, kidneys, muscle cells and in macrophages. The polymorphism of Apo E has been implicated in several diseases including cardiovascular disease and neurodegenerative diseases such as Alzheimer’s.

Apo E deficiency causes high serum cholesterol and triglyceride levels and leads to premature atherosclerosis. A number of factors can affect Apo E concentrations including: the genetic polymorphism, oral contraceptive intake, puberty, BMI and age.

Randox Apolipoprotein E

• Liquid ready-to-use reagents for convenience and ease of use
• Excellent measuring range of 1.04 - 12.3 mg/dl. The normal range for Apo E is approximately 2.7 - 4.5 mg/dl, therefore the Randox assay will ensure abnormal Apo E levels are detected
• Limited interference from Bilirubin, Haemoglobin, Intralipid® and Triglycerides for truly accurate results
• Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
• Immunoturbidimetric method
• Apolipoprotein control and calibrator available

Apolipoprotein C-III

Cat. No: LP3865

R1 2 x 11ml, R2 2 x 5ml

Apo C-III is an amino acid protein which circulates in plasma in association with triglyceride rich lipoproteins (chylomicrons, VLDL and IDL) and HDL. Apo C-III modulates the uptake of triglyceride-rich lipoproteins by the LDL receptor related protein through the inhibition of lipoprotein lipase. Elevated levels of Apo C-III are associated with both primary and secondary hypertriglyceridemia.

Genetically determined Apo C-III deficiency in humans can increase the rate of triglyceride clearance from plasma by up to seven fold. However elevated Apo C-III levels can be detected in many pathological conditions including: type 2 diabetes, hyperbilirubinemia, kidney malfunction and decreased thyroid function. Factors that can influence Apo C-III levels include: gender, age, menopause and genetic polymorphisms in the Apo C-III gene.

Randox Apolipoprotein C-III

• Liquid ready-to-use reagents for convenience and ease of use
• Excellent linearity of 21.7 mg/dl. The approximate normal upper limit for Apo C-III is 9.5 mg/dl, therefore the Randox assay will comfortably detect elevated and potentially harmful levels of Apo C-III
• Limited interference from Bilirubin, Haemoglobin, Intralipid® and Triglycerides for truly accurate results
• Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
• Immunoturbidimetric method
• Apolipoprotein controls and calibrator available
Fructosamine

Cat. No: FR3133      RI 5 x 25ml, R2 5 x 6.3ml
FR4030                RI 4 x 19.8ml, R2 4 x 6.9ml

Fructosamine is a mid-term indicator of diabetic control as it can provide information on a person’s average blood glucose levels over the preceding 14-21 days.

Due to the shorter time span of fructosamine, it is often used to evaluate the effectiveness of medication changes and to monitor the treatment of gestational diabetes. Fructosamine is also particularly useful in situations where HbA1c cannot be reliably measured when individuals have, for example: haemolytic anaemia, thalassemia or genetic haemoglobin variants.

Randox Fructosamine

High performance enzymatic method which offers improved specificity and reliability compared to conventional NBT-based methods. The Randox enzymatic method does not suffer from non-specific interferences unlike other commercially available fructosamine assays

- Liquid ready-to-use reagents convenience and ease of use
- Limited interference from Bilirubin, Glucose, Haemoglobin, Intralipid® and Triglycerides ensuring truly accurate results are produced
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Fructosamine controls and calibrator available

Fig. 5. Visual time representation of rise and fall of fructosamine 1 HbA1c (not to scale)

Non-Esterified Fatty Acids - NEFA

Cat. No: FA115        RI 3 x 10ml, R2 3 x 20ml

Non-esterified fatty acids (NEFA) are molecules released from triglycerides by the action of the enzyme lipase and are transported in the blood bound to albumin. NEFA are major contributors to the body’s energy supply despite representing a small proportion of the body’s fat percentage.

Measurement of NEFA is particularly important in diabetes where insulin deficiency results in the metabolism of fat. Levels are also frequently increased in obese patients.

Randox NEFA

- Lyophilised reagents for enhanced stability
- Calibrator supplied with kit simplifying the ordering process
- Excellent measuring range of 0.072 - 2.24 mmol/l. The normal fasting range for NEFA is approximately 0.1-0.9 mmol/l, therefore the Randox NEFA test will comfortably detect abnormal levels within a sample
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Colorimetric method
- Complementary controls and standard available
**RENAL FUNCTION 03**

**Cystatin C**

**Cat. No:** CYS4004

Randox Cystatin C

- Liquid ready-to-use reagents for convenience and ease of use
- Extensive measuring range of 0.4 - 10 mg/l. The approximate normal range for Cystatin C is 0.57-1.05 mg/l therefore the Randox Cystatin C assay will comfortably detect abnormal concentrations
- Stable until expiry when stored at +2 to +8°C
- Latex Enhanced Immunoturbidimetric method
- Cystatin C control and calibrator available

Cystatin C is a small (13 kDa) cysteine proteinase inhibitor produced at a constant rate by all nucleated cells. The small molecular weight of cystatin C allows it to be completely removed and broken down by the kidneys. Levels therefore remain steady if the kidneys are working efficiently and the Glomerular Filtration Rate (GFR) is normal.

Cystatin C is a particularly useful marker of renal function in patients where creatinine measurements are not reliable e.g. individuals who are: obese, malnourished, have liver cirrhosis or reduced muscle mass. Furthermore, unlike creatinine, cystatin C does not have a ‘blind area’: up to 50% of renal function can be lost before significant creatinine elevation occurs. Cystatin C is extremely sensitive to very small changes in GFR and is therefore capable of detecting early stage kidney dysfunction.

**D-3-Hydroxybutyrate (Ranbut)**

**Cat. No:** RB1007, RB1008, RB4067, RB8378

Randox D-3-Hydroxybutyrate

- Superior methodology when compared to other commercially available ketone detection tests. For example, the nitroprusside method used in semi-quantitative dipstick tests only detects acetone and acetoacetate, not D-3 Hydroxybutyrate. As D-3-Hydroxybutyrate is the most abundant ketone during ketosis the measurement of this analyte is essential - the Randox D-3-Hydroxybutyrate assay facilitates this analysis
- Wide measuring range of 0.1 - 5.75 mmol/l, comfortably detecting abnormal levels of D-3 Hydroxybutyrate in a sample
- Standard supplied with kit simplifying the ordering process
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Suitable for use in serum reducing the risk of false negatives
- Enzymatic method
- Complementary controls and calibrators available
- (L) indicated liquid option

D-3-Hydroxybutyrate is the most sensitive ketone for the diagnosis of ketosis, in particular diabetic ketoacidosis. Ketosis, a metabolic process, occurs when the body switches from glucose to predominantly fat metabolism for energy production when carbohydrate availability reaches low levels.

Metabolism of fatty acids in the liver results in the production of other ketones, consisting of acetone and acetoacetate which are less sensitive. Levels of ketone bodies in the blood are elevated (ketosis) when synthesis exceeds breakdown.
**Liquid Enzymatic Creatinine**

**Cat. No:**
- CR8122: R1 4 x 65ml, R2 4 x 32.3ml
- CR8317: R1 4 x 20ml, R2 4 x 9.5ml
- CR4037: R1 4 x 50ml, R2 4 x 19.5ml

Creatinine clearance in the kidney gives a measure of the Glomerular Filtration Rate (GFR) and is the standard marker for renal function.

The enzymatic method of creatinine measurement displays several advantages over the JAFFE method:
- Highly specific
- No interferences from endogenous creatinine as it is not involved in the pathway
- Eliminates the requirement for urea determination

**Microalbumin**

**Cat. No:**
- MA2423: R1 3 x 100ml, R2 5 x 7ml
- MA2426: R1 1 x 60ml, R2 1 x 7ml
- MA3828: R1 6 x 20ml, R2 3 x 8ml
- MA8056: R1 2 x 20ml, R2 2 x 6.6ml
- MA8325: R1 1 x 20ml, R2 1 x 4.6ml

The microalbumin assay detects very low levels of albumin in urine. The detection of albumin in urine can be an indicator of kidney injury which can result in irreversible damage if left untreated. Low albumin concentrations in the urine (20-200 mg/day) are the earliest marker of renal damage and therefore enable preventative measures to be taken.

Microalbumin testing can identify individuals with diabetic nephropathy approximately 5-10 years earlier than proteinuria tests helping reduce the incidence of end stage renal disease.

**Total Antioxidant Status - TAS**

**Cat. No:** NX2332 5 x 10ml

The antioxidant defence system has many components. A deficiency in any of these components can cause a reduction in the overall antioxidant status of an individual.

Reduction in total antioxidant status (TAS) has been implicated in a number of disease states including: heart disease, rheumatoid arthritis, diabetes and cancer.

TAS analysis is also useful in relation to retinopathy and age-related conditions. These can be monitored to promote supplementation and disease prevention.

**Randox Liquid Enzymatic Creatinine**

**UF**
- Enzymatic method offering superior specificity when compared to traditional Jaffe creatinine assays
- Liquid ready-to-use reagents for optimum convenience and ease of use
- Limited interference from Bilirubin, Haemoglobin, Intralipid® and Triglycerides, for truly accurate results and ensuring it is suitable for use with paediatric samples
- Extensive measuring range of 9 - 2517 μmol/l. The approximate normal creatinine range for men is 53 - 106 μmol/l and for women is 44 - 88 μmol/l. Therefore, the Randox test will comfortably detect abnormal levels of creatinine within a sample
- No sample blank required
- Complementary controls and calibrators available

**Randox Microalbumin**

**UF**
- Standard supplied with kit simplifying the ordering process
- Immunoturbidimetric method - enabling sensitive and accurate albumin assessment
- Liquid ready-to-use reagents for convenience and ease of use
- Excellent sensitivity - of 5.11mg/l, ensuring even low albumin concentrations are detected
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Microalbumin controls available

**Randox TAS**

**UF**
- Suitable for automation whereas other commercially available products are based on ELISA technology which does not offer the same level of convenience and efficiency as the Randox TAS assay
- Standard supplied with kit simplifying the ordering process
- Excellent measuring range of 0.21 - 2.94 mmol/l
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Colorimetric method
- Total antioxidant status control and standard available
Randox Glutathione Peroxidase

- **Cat. No:** RS504 8 x 6.5ml
- **Cat. No:** RS505 8 x 10ml

Ransel measures glutathione peroxidase which has a **direct correlation with selenium levels.**

Selenium is an essential trace element involved in the aetiology of a number of diseases. At normal concentrations selenium has a protective effect against several disease states; however, this protection is lost at lower concentrations. Conversely, selenium can be toxic at high concentrations, therefore, it is important to monitor selenium levels to ensure they are kept within the normal range.

The risk factors associated with abnormal selenium concentrations include: age, diet, smoking, stress, autoimmune diseases and chemotherapy.

Randox Glutathione Peroxidase

- **Enzymatic method** enabling sensitive and accurate glutathione peroxidase assessment
- **Excellent sensitivity** of 75 U/l ensuring even low glutathione peroxidase concentrations are detected
- **Applications available** detailing instrument-specific settings for a wide range of clinical chemistry analysers
- **Glutathione peroxidase (Randox Ransel) control and calibrator available**

Glutathione Peroxidase (Randox Ransel)

Cat. No: RS504 8 x 6.5ml
RS505 8 x 10ml

Ransel measures glutathione peroxidase which has a **direct correlation with selenium levels.**

Selenium is an essential trace element involved in the aetiology of a number of diseases. At normal concentrations selenium has a protective effect against several disease states; however, this protection is lost at lower concentrations. Conversely, selenium can be toxic at high concentrations, therefore, it is important to monitor selenium levels to ensure they are kept within the normal range.

The risk factors associated with abnormal selenium concentrations include: age, diet, smoking, stress, autoimmune diseases and chemotherapy.

Randox Glutathione Peroxidase

- **Enzymatic method** enabling sensitive and accurate glutathione peroxidase assessment
- **Excellent sensitivity** of 75 U/l ensuring even low glutathione peroxidase concentrations are detected
- **Applications available** detailing instrument-specific settings for a wide range of clinical chemistry analysers
- **Glutathione peroxidase (Randox Ransel) control and calibrator available**

Glutathione Peroxidase (Randox Ransel)

Cat. No: RS504 8 x 6.5ml
RS505 8 x 10ml

Glutathione reductase is required for the regeneration of reduced glutathione which is important for normal cellular metabolism. This enzyme is often discussed in association with glutathione peroxidase, which requires reduced glutathione for activation.

Glutathione reductase is responsible for maintaining levels of reduced glutathione which has many important intracellular functions within bodily cells. Glutathione plays a role in protein folding and the maintenance of reduced pools of vitamin C and E. Depleted levels of glutathione reductase can lead to **haemolysis.**

Randox Glutathione Reductase

- **Lyophilised reagents** for enhanced stability
- **Excellent measuring range** of 9.69 - 387 U/l
- **Suitable for use with a variety of sample types** - serum, plasma and erythrocytes
- **Applications available** detailing instrument-specific settings for a wide range of clinical chemistry analysers
- **UV method**
- **Glutathione reductase control and calibrator available**

Glutathione Reductase

Cat. No: GR2368 R1 5 x 5ml, R2 5 x 3ml

Glutathione reductase is required for the regeneration of reduced glutathione which is important for normal cellular metabolism. This enzyme is often discussed in association with glutathione peroxidase, which requires reduced glutathione for activation.

Glutathione reductase is responsible for maintaining levels of reduced glutathione which has many important intracellular functions within bodily cells. Glutathione plays a role in protein folding and the maintenance of reduced pools of vitamin C and E. Depleted levels of glutathione reductase can lead to **haemolysis.**

Randox Soluble Transferring Receptor (sTfR)

- **Excellent correlation** coefficient of r=0.977 when compared against other commercially available methods
- **Excellent measuring range** of 0.5 – 11.77mg/L, comfortably detecting levels outside of the normal range
- **Liquid ready-to-use reagent** for convenience and ease of use
- **Latex Enhanced Immunoturbidimetric method**
- **Stable to expiry** when stored at +2 to +8°C

Soluble Transferrin Receptor (sTfR)

Cat. No: TF10159 R1 1 x 9ml, R2 1 x 5.8ml

Transferrin transports iron around the body, donating it to bodily cells by interacting with a specific membrane receptor, the transferrin receptor (TfR). A soluble form of the TfR (sTfR) has been identified in animal and human serum, circulating freely in the blood.

sTfR is a **marker of iron status.** In iron deficiency anaemia, sTfR levels are significantly increased, however, remain normal in the anaemia of inflammation. As such, sTfR measurement is useful in the differential diagnosis of **microcytic anaemia.**

Randox Soluble Transferring Receptor (sTfR)

- **Excellent correlation** coefficient of r=0.977 when compared against other commercially available methods
- **Excellent measuring range** of 0.5 – 11.77mg/L, comfortably detecting levels outside of the normal range
- **Liquid ready-to-use reagent** for convenience and ease of use
- **Latex Enhanced Immunoturbidimetric method**
- **Stable to expiry** when stored at +2 to +8°C

Soluble Transferrin Receptor (sTfR)
**Vanadate Oxidation Bilirubin**

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BR9765</td>
<td>R1 4 x 14ml, R2 4 x 6ml (Direct)</td>
</tr>
<tr>
<td>BR9766</td>
<td>R1 4 x 68ml, R2 4 x 25ml (Total)</td>
</tr>
<tr>
<td>BR4061</td>
<td>R1 4 x 20ml, R2 4 x 8ml (Total)</td>
</tr>
<tr>
<td>BR8132</td>
<td>R1 4 x 52.2ml, R2 4 x 20ml (Total)</td>
</tr>
<tr>
<td>BR8133</td>
<td>R1 4 x 52.2ml, R2 4 x 20ml (Direct)</td>
</tr>
<tr>
<td>BR8377</td>
<td>R1 4 x 20ml, R2 4 x 8ml (Total)</td>
</tr>
<tr>
<td>BR8308</td>
<td>R1 4 x 20ml, R2 4 x 8ml (Direct)</td>
</tr>
</tbody>
</table>

Bilirubin levels are extremely valuable for the diagnosis and monitoring of liver diseases including: hepatitis, cirrhosis and gallstones. Other conditions characterised by elevated bilirubin concentrations include haemolytic anaemia and sickle cell disease.

It is vital that bilirubin levels are tested in new-borns where jaundice has not resolved itself within 8-14 days as. Elevated levels can indicate a problem with the formation of the bile ducts or irregular metabolism in the liver.

**Randox Superoxide Dismutase**

- Lyophilised reagents for enhanced stability
- Standard supplied with kit simplifying the ordering process
- Multiple analytical uses - clinical, veterinary, sports, cosmetics and pharma
- Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
- Colorimetric method
- Superoxide dismutase (Randox Ransod) control available

**Superoxide Dismutase (Randox Ransod)**

Cat. No: SD125 5 x 20ml

Superoxide dismutase (SOD) catalyses the dismutation of superoxide into oxygen and hydrogen peroxide, consequently providing protection against superoxide which is one of the most common free radicals in the body. The enzyme acts by repairing and/or reducing the amount of damage done to cells.

Ransod (Randox Superoxide Dismutase) can be used in the diagnosis of diseases associated with abnormal SOD levels including, neurological disorders such as Amyotrophic Lateral Sclerosis (ALS). SOD can also be used to treat various ailments including arthritis, burns and inflammatory diseases.

Research has shown SOD levels to decrease and levels of free radicals to increase in the body with age, suggesting SOD plays a major role in the aging process.

**Randox Aldolase**

Cat. No: AD189 5 x 20ml

Aldolase is an enzyme responsible for converting glucose into energy. In humans the approximate normal aldolase range is 1 - 7.6 U/L. Elevated levels are detectable in the blood of individuals with skeletal muscle damage and liver disease. In skeletal muscle diseases, including muscular dystrophy, damaged cells lyse, releasing aldolase into the blood. Levels also rise in conditions such as injury and gangrene, however remain normal in situations where weakness is caused by a neurological disease e.g. multiple sclerosis.

**Randox Vanadate Oxidation Bilirubin**

- Superior Vanadate Oxidation methodology does not suffer from interferences from non-conjugated bilirubin unlike the diazo-based methods
- Limited interference from Haemoglobin and Lipids
- Liquid ready-to-use reagents for convenience and ease of use
- No pre-step required whereas other commercially available bilirubin assays may involve a pre-step, requiring two assay components to be mixed together. The Randox Vanadate Oxidation method eliminates this step, increasing testing efficiency
- Applications available detailing instrument-specific settings for a wide range of analysers
- Stable until expiry when stored at +2°C to +8°C
- Complementary controls and calibrators available
CLINICAL CHEMISTRY 05

5th Generation Bile Acids
Cat. No:  BI7982  R1 6 x 50ml, R2 6 x 18ml
BI3863  R1 2 x 18ml, R2 2 x 8ml
BI8150  R1 2 x 17.7ml, R2 2 x 8.9ml

Bile acids is a highly sensitive marker of liver function, enabling the easy confirmation of liver disease. Bile acids is also the most accurate method for diagnosing obstetric cholestasis in pregnant women, a common liver condition affecting women during the second and third trimester of pregnancy. The condition restricts the flow of bile through the gallbladder resulting in a build-up of bile acids in the liver, consequently bile acids leak into the bloodstream where they are detected at increased levels.

Glucose-6-Phosphate Dehydrogenase - G-6-PDH
Cat. No:  PD410  R1 1 x 100ml, R2 1 x 2ml (UV)
PD2616  750T (Qualitative screen test)

G-6-PDH is a cytosolic enzyme located on the X-chromosome of bodily cells. G-6-PDH is involved in the normal processing of carbohydrates. It also plays a critical role in red blood cells, protecting them from damage and premature destruction.

Depleted levels of G-6-PDH cause red blood cells to become particularly vulnerable to haemolysis. If the bone marrow cannot compensate for the reduction of red blood cells, haemolytic anaemia can occur.

Immunoglobulin E - IgE
Cat. No:  IE7308  R1 1 x 8ml, R2 1 x 5ml
IE8152  R1 1 x 8.7ml, R2 1 x 5.7ml

Immunoglobulin E (IgE) is nor mally found in the blood in trace amounts. IgE is an antibody released by the immune system as a defence mechanism when it believes the body is at risk. IgE are used as a guide in the diagnosis of allergic reactions, including: asthma, hay fever, dermatitis and food allergies.

Although testing for IgE will not diagnose a specific allergy increased concentrations will indicate that an allergic response has occurred, facilitating further investigation.

Randox 5th Generation Bile Acids
UF
Superior methodology utilising an advanced enzyme cycling method which displays outstanding sensitivity and precision when compared to traditional enzymatic based tests
• Liquid ready-to-use reagents for convenience and ease of use
• Excellent linearity up to 188 μmol/l. The normal upper range of Bile Acids in a fasting serum sample is 10 μmol/l
• Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
• Complementary controls and calibrators available

Randox G-6-PDH
UF
Superior stability of 4 weeks once reconstituted and stored at +2ºC to +8ºC. Many other commercially available assays offer just 5 days stability, leading to greater product wastage
UF
Minimal interference as the sample pre-wash step included in the Randox G-6-PDH testing method serves to purify the sample, leading to no known interferences being observed
• Lyophilised reagents for enhanced stability
• Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
• G-6-PDH control available

Randox IgE
• Liquid ready-to-use reagents for convenience and ease of use
• Extensive measuring range of 19.6 - 1007 IU/ml. The approximate upper limits of the normal IgE range for children aged 1-5 years is 60 IU/ml; for those aged 6-9 years is 90 IU/ml; for 10-15 year olds is 200 IU/ml; and for adults is 100 IU/ml. The Randox IgE assay can comfortably detect elevated levels in a range of patient types
• Limited interference from Bilirubin, Haemoglobin, Intralipid® and Triglycerides producing highly accurate results
• Applications available detailing instrument-specific settings for a wide range of clinical chemistry analysers
• Immunoturbidimetric method
• IgE calibrator and complementary controls available
Copper

Cat. No: CU2340
R1 5 x 20ml, R2 1 x 30ml

Copper is an essential trace element found in human nutrition and is a component of many metalloenzymes. Copper is important for a number of functions including the creation of connective tissues, production of energy in cells as well as nervous system and brain functions.

Copper testing is predominantly carried out to diagnose Wilson Disease, an inherited disorder which is associated with excess copper storage in the brain, liver and other organs. Wilson Disease prohibits the liver from safely storing and excreting copper, resulting in it seeping out of the liver; building up in the eyes, kidneys and brain causing nerve damage, and if left untreated, it can be fatal.

Copper deficiency can also occur; however, this is less common. Menkes Disease is a genetic condition which commonly occurs in premature babies, resulting in bone abnormalities and fractures. Menkes Disease is characterised by sparse, kinky hair, developmental problems and seizures as young children with this disorder are unable to absorb enough copper.

Zinc

Cat. No: ZN2341 1 x 250ml (with Deproteinisation)
ZN2607 6 x 50ml (Deproteinising Solution)

Zinc is an essential trace metal which is required for a number of functions including cell and enzyme production, the metabolism of carbohydrates, fat and protein from dietary intake and wound healing.

Zinc deficiency is often the result of a low dietary intake and can lead to a number of problems including: impaired immune and cognitive functions, foetal growth and development problems during pregnancy, liver and kidney disease, diabetes and malabsorption syndrome.
Acetaminophen (Paracetamol)
Acid Phosphatase
Adiponectin
Albumin
Aldolase
Alkaline Phosphatase
Alpha-1-Acid Glycoprotein
Alpha-1-Antitrypsin
Alanine Aminotransferase (ALT)
Ammonia
Amylase
Amylase (Pancreatic)
Anti-Streptolysin O (ASO)
Apolipoprotein A-I
Apolipoprotein A-II
Apolipoprotein B
Apolipoprotein C-II
Apolipoprotein C-III
Apolipoprotein E
Aspartate Aminotransferase (AST)
Barbiturates
Benzodiazepines
ß2 Microglobulin
Bile Acids
Bilirubin (Total/Direct)
Calcium
Cannabinoids
Carbamazepine
Ceruloplasmin
Chloride
Cholesterol (Total)
Cholesterol (HDL)
Cholesterol (HDL3)
Cholesterol (LDL)
Cholesterol (sdLDL)
Cholinesterase
CK-MB
CK-NAC
CO₂ Total
Cocaine Metabolite
Complement C3
Complement C4
Copper
Creatinine
CRP
CRP (Canine)
CRP (Full Range)
CRP (High Sensitivity)
Cystatin C
Digoxin
ECG
EDDP
Ethanol
Ferritin
Fructosamine
G-6-PDH
Gamma GT
Gentamicin
GLDH
Glucose
Glutamate
Glutamine
Glutathione Peroxidase (Ransel)
Glutathione Reductase
Glycerol
Haemoglobin
Haptoglobin
HbA1c
Heart-type Fatty Acid Binding Protein (H-FABP)
Homocysteine
D-3-Hydroxybutyrate (Ranbut)
IgA
IgE
IgG
IgM
Iron
Iron/UIBC
L-Lactate
Lactate Dehydrogenase
Leucine Arylamidase (LAP)
Lipase
Lipoprotein (a)
Lithium
Magnesium
Methadone
Methamphetamine
Microalbumin
Myoglobin
NEFA (Non-Esterified Fatty Acids)
Opiates
Phenobarbital
Phenytoin
Phosphorus
Potassium
Pregnancy Test
Rheumatoid Factor (RF)
Sodium
sPLA₂-1 IA
Soluble Transferrin Receptor (sTfR)
Superoxide Dismutase (Ransod)
Syphilis
Total Iron Binding Capacity (TIBC)
Total Antioxidant Status (TAS)
Total Protein
Transferrin
Transferrin Receptor (Prealbumin)
Triglycerides
TxB2Cardio™
Urea
Urinary Protein
Uric Acid
Valproic Acid
Zinc
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