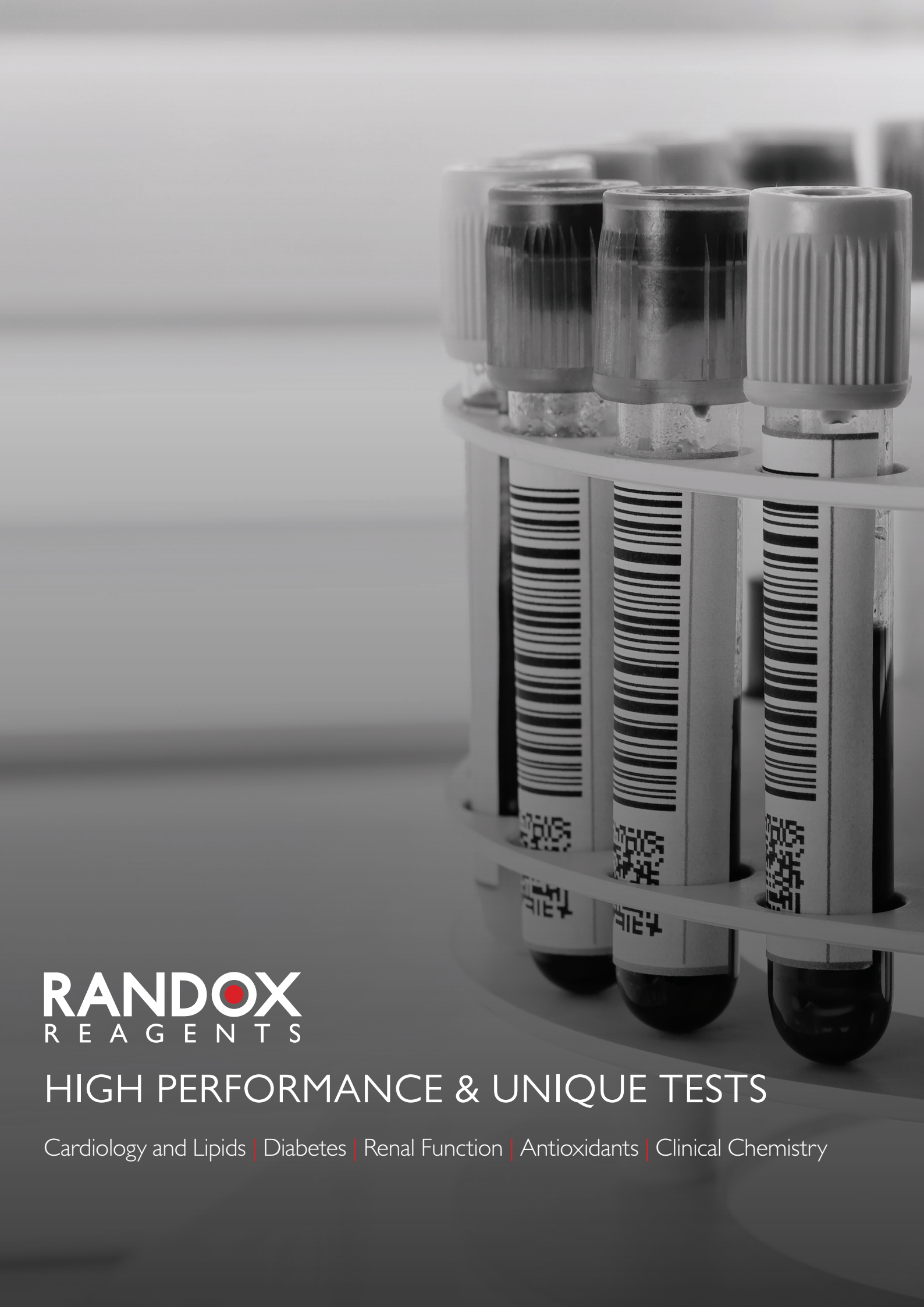
HIGH PERFORMANCE & UNIQUE TESTS

DESIGNED TO MEET THE NEEDS OF YOUR LABORATORY

RANDOX



RANDOX
REAGENTS

HIGH PERFORMANCE & UNIQUE TESTS

Cardiology and Lipids | Diabetes | Renal Function | Antioxidants | Clinical Chemistry

CONTENTS

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.

BRING TESTING IN-HOUSE

With smaller kit sizes and excellent reagent stability (most are stable for 28 days on-board the analyser), you don't have to worry about reagent wastage, allowing testing to be brought in-house.

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.

NP 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

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.**

Randox Adiponectin

- **Automated immunoturbidimetric assay** offering a more convenient and time efficient method for adiponectin 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
- **Adiponectin controls and calibrator available**

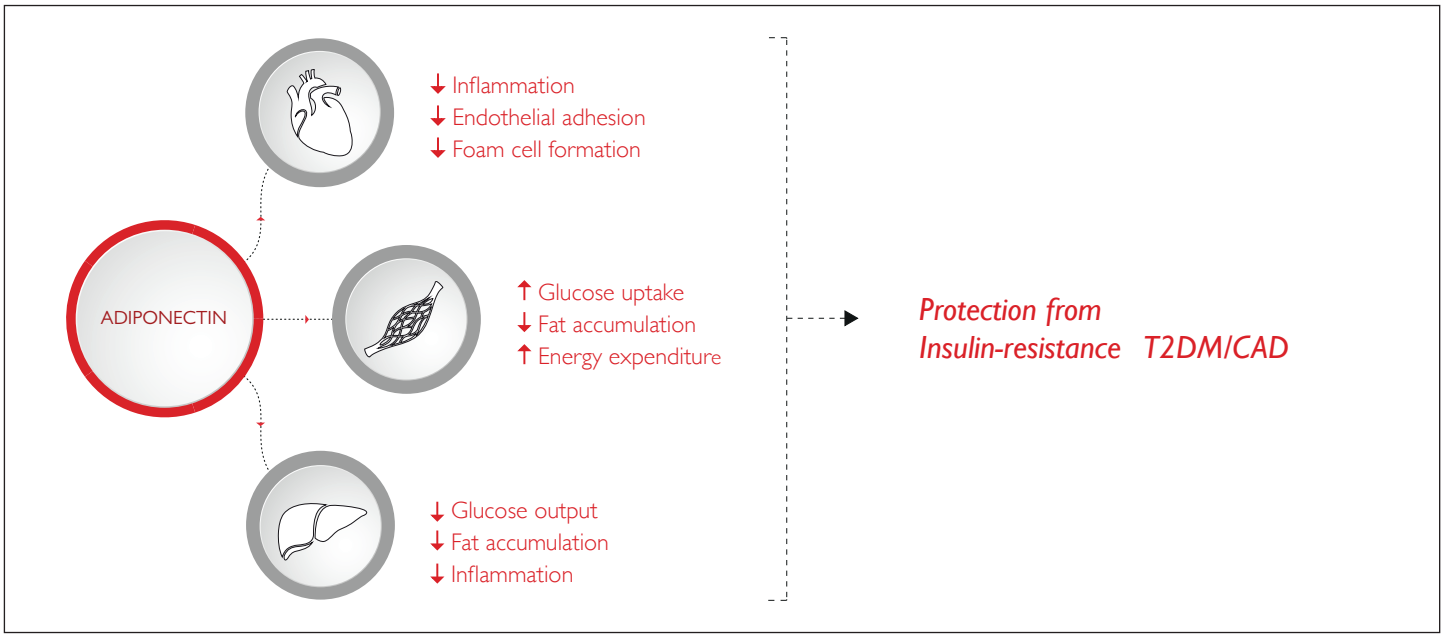


Fig. 1. Proposed salutary effects of adiponectin

Lipoprotein(a) - Lp(a)

Cat. No:	LP2757	R1 1 x 30ml, R2 1 x 15ml
	LP3403	R1 1 x 10ml, R2 1 x 6ml
	LP8324	R1 1 x 10ml, R2 1 x 6.5ml
	LP8054	R1 2 x 8.7ml, R2 2 x 5.8ml

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 under or overestimate 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)

- UF **The Randox Lp(a) assay is one of the only methodologies on the market that detects the non-variable part of the Lp(a) molecule and therefore suffers minimal size related bias** providing more accurate and consistent results. The Randox Lp(a) kit is standardised to the WHO/ IFCC reference material SRM 2B and is closest in terms of agreement to the ELISA reference method.
- UF **Five point calibrators with accuracy-based assigned target values are provided** which accurately reflects the heterogeneity of isoforms present in the general population
- UF **Measuring units available in nmol/L upon request**
- **Highly sensitive and specific** method for Lp(a) detection in serum and plasma
- **Applications are available for a wide range of biochemistry analysers** detailing instrument-specific settings for the convenient use of Randox Lp(a) on a variety of systems
- **Liquid ready-to-use reagents** for convenience and ease of use
- **Lp(a) controls and calibrator available**

NP Heart–type Fatty Acid Binding Protein - H-FABP

Cat. No: **FB4025** R1 1 x 19ml, R2 1 x 7ml

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**

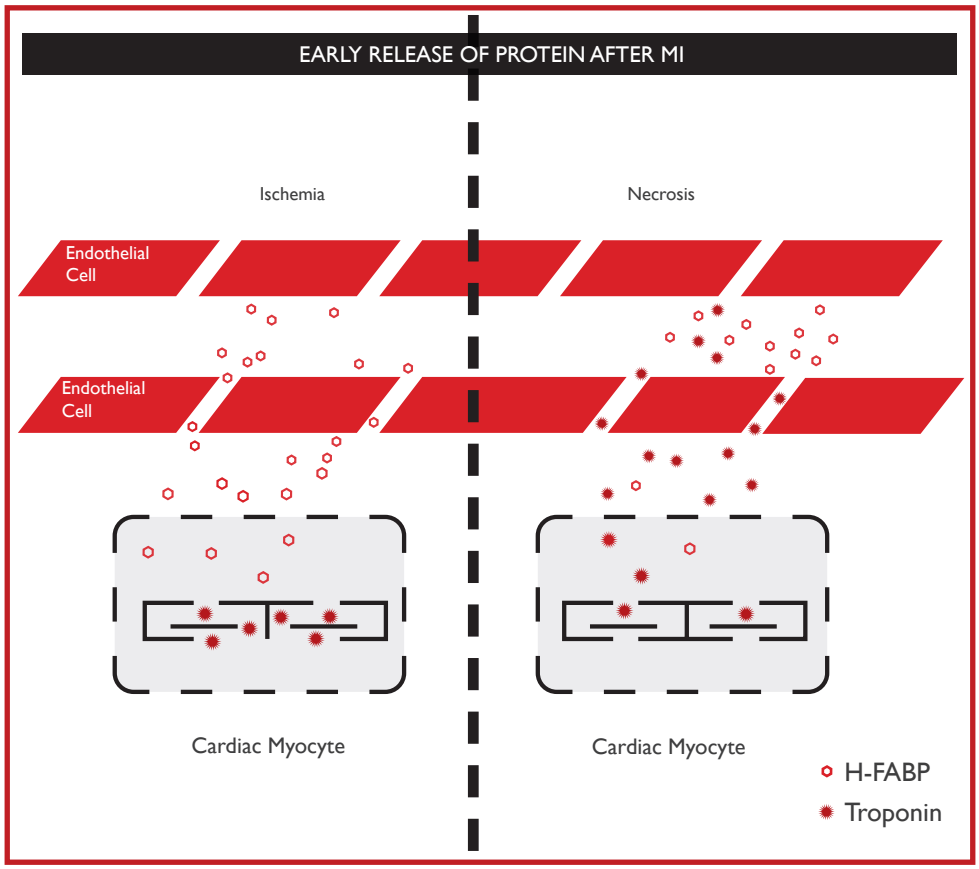


Fig. 2. The comparison of H-FABP and Troponin release after MI

NP Small-dense LDL Cholesterol - sdLDL-C

Cat. No: **562616** R1 1 x 19.8ml, R2 1 x 8.6ml
CH8153 R1 1 x 16.2ml, R2 1 x 8.2ml

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**

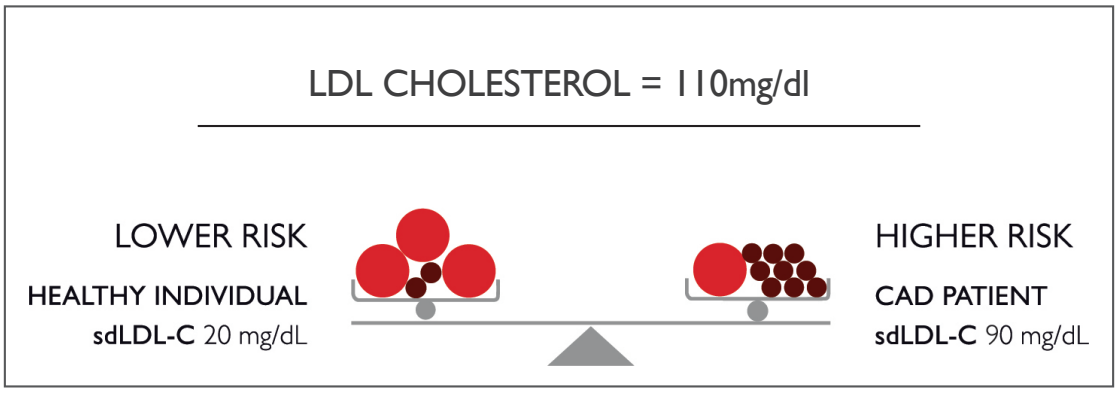


Fig. 3. Size matters: The true weight of risk in lipid profiling

NP $sPLA_2$-IIA

$sPLA_2$ is a family of pro-inflammatory enzymes linked to the formation and destabilization of atherosclerotic plaques. The $sPLA_2$ protein expression increases with atherosclerotic lesions.

COMING SOON FROM RANDOX

$sPLA_2$-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 $sPLA_2$-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

NP TxBCardio™

Cat. No: TBX2759 R1 1 x 9ml, R2 1 x 4.7ml

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 TxA_2 in patients as the Randox TxBCardio™ assay specifically measures $IIdhTxB_2$. $IIdhTxB_2$ is the most abundant metabolite of TxA_2
- **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**

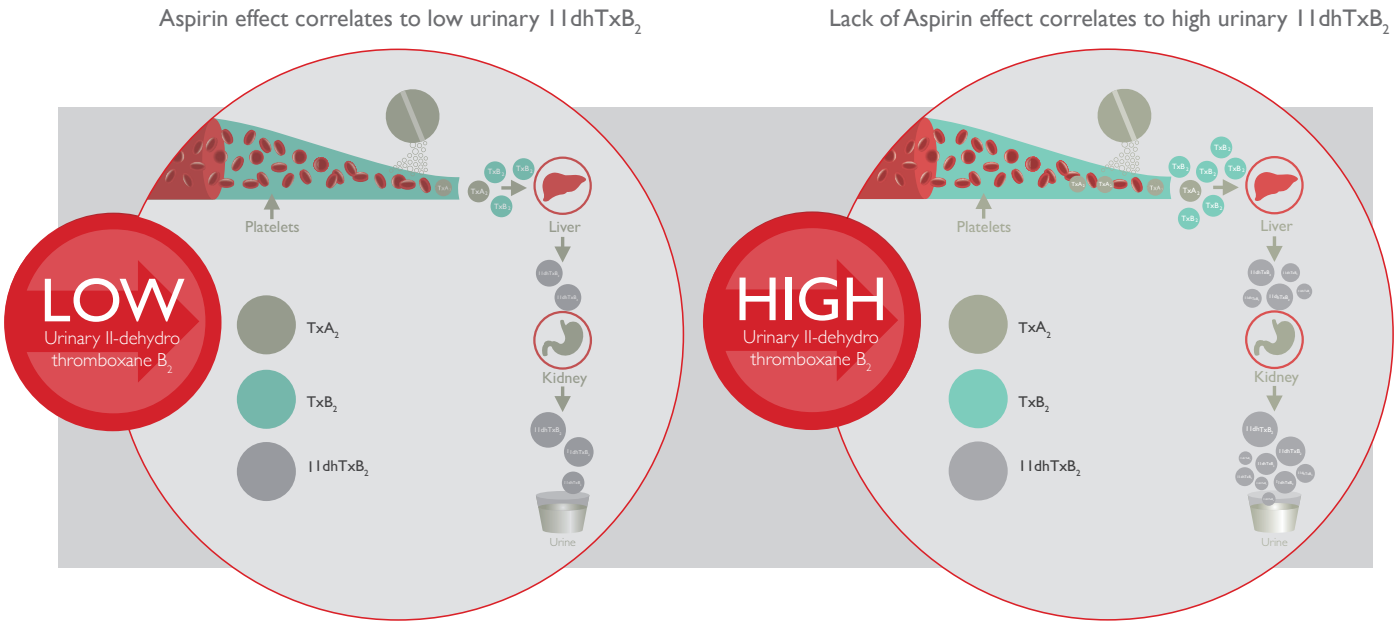


Fig. 4. The correlation of aspirin effect and urinary $IIdhTxB_2$

NP HDL2/3 Cholesterol - HDL2/3

Cat. No: CH10165 R1 1 x 20ml, R2 1 x 7.5ml
CH10163 R1 4 x 38.2ml, R2 4 x 18.2ml
CH8155 R1 1 x 20ml, R2 1 x 10ml

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

Cat. No: HY4036 R1 2 x 21.7ml, R2 2 x 4.6ml

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.

Randox Homocysteine

- UF **Limited interference** from Bilirubin, Haemoglobin, Triglycerides and Intralipid®, producing more accurate and precise results
- UF **Two-reagent format** for convenience and ease of use
- UF **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**

NP Apolipoprotein C-II

Cat. No: LP3866 R1 2 x 11ml, R2 2 x 5ml

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 hydrolyses 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.**

Randox 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**

NP 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**

NP 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**

Fructosamine

Cat. No: **FR3133** R1 5 x 25ml, R2 5 x 6.3ml
FR4030 R1 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

UF **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**

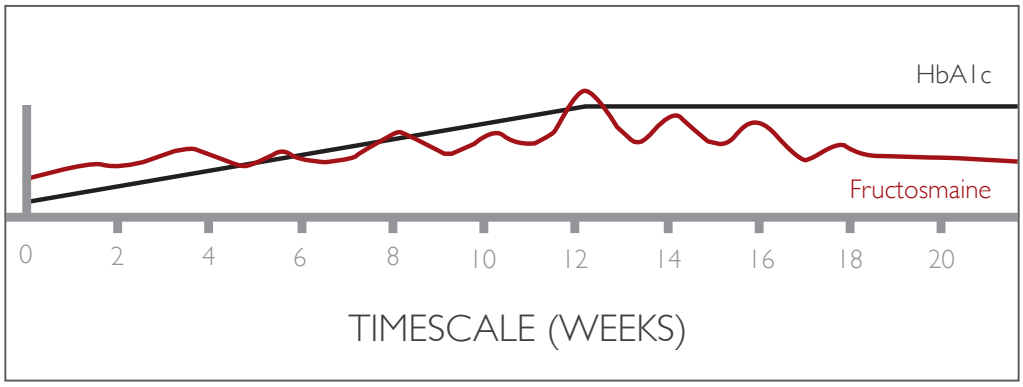


Fig. 5. Visual time representation of rise and fall of fructosamine I HbA1c (not to scale)

NP Non-Esterified Fatty Acids - NEFA

Cat. No: **FA115** R1 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 contributers 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**

DIABETES 02

NP D-3-Hydroxybutyrate (Ranbut)

Cat. No:		
	RB1007	10 x 10ml
	RB1008	10 x 50ml
	RB4067	R1 2 x 20ml, R2 2 x 5.8ml (L)
	RB8378	R1 2 x 20ml, R2 2 x 6.1ml (L)

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.

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**

RENAL FUNCTION 03

NP Cystatin C

Cat. No:		
	CYS4004	R1 2 x 17.6ml, R2 2 x 6.1ml

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.**

Randox Cystatin C

- **Liquid ready-to-use reagents** 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**

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

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**

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.

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**

NP 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 TAS

- **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**

NP 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**

NP 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 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**

NP 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

NP 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 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**

NP 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 Aldolase

- **Lyophilised reagents** for enhanced stability
- **Excellent measuring range** of 1.73 - 106 U/l
- **Applications available** detailing instrument-specific settings for a wide range of clinical chemistry analysers
- **UV method**
- **Aldolase controls and calibrator available** for a complete quality testing package

Vanadate Oxidation Bilirubin

Cat. No:	**BR9765**	R1 4 x 14ml, R2 4 x 6ml (Direct)
	BR9766	R1 4 x 68ml, R2 4 x 25ml (Total)
	BR4061	R1 4 x 20ml, R2 4 x 8ml (Total)
	BR8132	R1 4 x 52.2ml, R2 4 x 20ml (Total)
	BR8133	R1 4 x 52.2ml, R2 4 x 20ml (Direct)
	BR8377	R1 4 x 20ml, R2 4 x 8ml (Total)
	BR8308	R1 4 x 20ml, R2 4 x 8ml (Direct)

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 Vanadate Oxidation Bilirubin

- UF **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**

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 early 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.

Randox 5th Generation Bile Acids

- **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 to188 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**

NP 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.

Randox G-6-PDH

- **Superior stability** of 4 weeks once reconstituted and stored at +2°C to +8°C. Many other commercially available assays offer just 5 days stability, leading to greater product wastage
- **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**

NP 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 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**

NP 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.

Randox Copper

- **Stable for 2 weeks** when stored at +2°C to +8°C, minimising reagent waste
- **Lyophilised reagents** for enhanced stability
- **Standard supplied with kit** simplifying the ordering process
- **Extensive measuring range** of 6.6 - 86 µmol/l. The approximate normal copper values in serum are 11 - 24 µmol/l in males and 12.6 - 24.4 µmol/l in females, therefore the Randox test will comfortably detect abnormal copper levels in a sample
- **Colorimetric method**
- **Complementary controls and calibrators available**

NP 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.**

Randox Zinc

- **Limited interference** from Haemoglobin, Bilirubin, Triglycerides and Intralipid®
- **Range of suitable sample types** including: serum, plasma and urine
- **Standard supplied with kit** simplifying the ordering process
- **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
- **Colorimetric method**
- **Complementary controls and calibrators available**

Please note: performance information presented was achieved using the Randox RX series of clinical analysers. Results may vary depending on the analyser used.

A-Z PORTFOLIO OF REAGENTS

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
$ß_2$ 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
CO_2 Total
Cocaine Metabolite
Complement C3
Complement C4
Copper
Creatinine
CRP
CRP (Canine)
CRP (Full Range)
CRP (High Sensitivity)
Cystatin C
Digoxin
Ecstasy
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
$sPLA_2$-IIA
Soluble Transferrin Receptor (sTfR)
Superoxide Dismutase (Ransod)
Syphilis
Total Iron Binding Capacity (TIBC)
Total Antioxidant Status (TAS)
Total Protein
Transferrin
Transthyretin (Prealbumin)
Triglycerides
TxBCardio™
Urea
Uric Acid
Urinary Protein
Valproic Acid
Zinc

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REAGENTS

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