The RX Series of clinical chemistry analysers is vital for all educational establishments involved in the training of biomedical scientists, clinical chemistry laboratory training or therapeutic areas of research such as Food, Nutrition & Metabolism, Veterinary, Sport & Exercise Science and Immunology.

The RX series is present in over 150 countries worldwide, and placed in a variety of settings from public hospitals to private clinical, research and veterinary laboratories. All students involved in any aspect of clinical chemistry will benefit greatly from being given the opportunity to work with the RX series during their educational training period.

The RX monza, our semi-automated analyser is extremely popular in the Research and Education field due to its adaptability for both entry level and advanced students of biochemistry and research. Entry level students will gain understanding in how to set up chemistries as they practice programming the parameters of the assay and following the step-by-step onboard instructions. More advanced students can experiment with performing different types of calibration or registering 3 levels of QC, functionality which is normally only found on automated instruments.

Renowned for its broad test menu, the RX series provides research students with an excellent range of assays which have been fully validated to run on the analysers. This combined with their superior performance and reliable results, makes the RX series the obvious choice for ambitious students wishing to become respected in their field and have their research published in journals.
The RX series has been developed by Randox to meet the growing needs of clinical chemistry testing. Robust hardware combined with intuitive software ensures exceptionally low downtime with unrivalled precision and accuracy for results you can trust.

**RX monza**

The RX monza is a compact semi-automated analyser with astonishing functionality, offering 192 channels. The RX monza will offer exciting opportunities for both routine and specialised testing.

**RX monaco**

The RX monaco is a fully automated random access clinical analyser capable of carrying out 170 tests per hour. It provides unrivalled performance for low to mid volume testing.

**RX daytona+**

Superior performance for mid volume laboratories. The RX daytona+ is capable of running 270 photometric tests per hour or 450 tests per hour including ISEs.

**RX imola**

Efficiency for medium sized laboratories. The RX imola is a random access benchtop clinical analyser with a throughput of 560 tests per hour including ISEs.
The RX monza is a semi-automated bench top clinical chemistry analyser, ideal for use in educational courses. The broad functionality of the RX monza takes students on a journey from basic to advanced practice, consolidating testing and cutting costs for educational budgets.

**Excellent Functionality**

The RX monza facilitates all levels of study from basic to high level.

**Basic User - Entry level students**
- Simple step-by-step onboard instructions
- Running the analyser in absorbance mode allows students to draw own calibration and reaction curves manually
- Open channels allow students to programme parameters according to Randox insert sheets, helping them understand how to set-up chemistries

**Advanced User - Higher level students**
- Enables students to experiment with functionality commonly found on automated instruments
- Ability to store and retrieve results
- Ability to register 3 levels of Quality Control
- User-defined reference ranges

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**Main Features of the RX monza**
- 192 channels including 113 open channels
- Space saving, compact bench-top design
- Small sample volume
- Comprehensive test menu
- Built-in Quality Control facility ensuring accuracy and reliability of results
- Automatic storage of up to 1000 results

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**Optimum Performance**

- Onboard checks help minimise potential for operator errors
- Validated reagents provide results comparable to an automated instrument

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**Ideal for Educational Budgets**

- Educators can use the same instrument for many practicals
- Onboard thermal printer eliminates the need for external equipment
- One year warranty as standard plus unrivalled technical support from Randox
- Minimal reaction volume of 500μl results in a low cost per test

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**Teaching Opportunities**

- 3 levels of password protection available enabling different levels of access for teachers, researchers and students
- Viewing reaction curves in ‘real time’ develops student understanding of how the chemistry is progressing
- Ability to plot Levey-Jennings charts - perfect for advanced students
- Large, adjustable backlit LCD screen allows for multiple students to benefit from demonstrations at one time

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**Wide Test Menu for Research Projects**

- Clinical chemistry, antioxidants, wine, food, nutrition, sports, cosmetics and veterinary assays
- Analysis of a wide range of analytes from as little as 5μl of sample

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**Flexibility**

- Quartz flow cell, supplied with the instrument removes the requirement for additional consumables
- Cuvette mode enables students to practice using standard 10mm cuvettes
- Temperature controlled flow cell and standard semi-micro or micro cuvette
- Calibration types available are: K-Factor, Linear, Point to point, Spline, Log-logit and 3 calibrations can be stored per assay.

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**Robust, Reliable, Easy-to-Use**

- Minimal daily maintenance required
- Students can learn how to perform an annual service by using the Randox service kit
The Randox Monza has rapidly become one of our most heavily utilised pieces of equipment! The ease of use, minimal sample volumes and diversity of assays allows the Monza to suit all our needs. We would not hesitate in recommending it to be the purchase of choice for any Sports Science laboratory."

Neil Willmore, Laboratory Manager & Camilla Holland, Senior Technical Officer Sport, Health & Exercise Dept. University of Hertfordshire, UK

RX monza Cuvette Incubator

This dry block thermostat for incubating cuvettes has been optimised for use with RX monza assays and is the ideal supplement to the RX monza analyser.

Catalogue Code:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>RX2901</td>
<td>RX monza analyser</td>
</tr>
<tr>
<td>M701-484</td>
<td>RX monza cuvette incubator</td>
</tr>
</tbody>
</table>
The RX monaco is a natural progression from a semi-automated to a fully automated analyser. It is adaptable and can be integrated into any laboratory setting, with the option of a floor standing unit if bench top space is limited. At optimal configuration, the RX monaco performs 170 tests per hour making it an efficient and cost effective option for a small laboratory or research centre.

### Main Features of the RX monaco
- 170 photometric tests per hour
- Minimum reaction volume 150μl
- 120 semi-permanent cuvettes
- 12 wavelengths generated via diffraction grating: 340, 380, 405, 450, 480, 505, 546, 570, 600, 660, 700, 800nm

### Optimum Performance
- Cuvette check function ensures only clean and viable reaction vessels are reused
- Integrated barcode readers for reagent and sample identification
- Built in inventory management system automatically reports remaining reagent volume
- Single reagent and sample pipette with digital liquid level detection and collision protection

### Excellent Functionality
- User friendly Microsoft Windows® based software
- Generation of Levey-Jennings charts, calibration curves and QC statistics

### Teaching Opportunities
- Low to medium throughput making the RX monaco a great introduction to automation
- Extensive dedicated test menu offers greater choice for routine and specialised research studies
- 3 levels of password protection available enabling different levels of access for teachers, researchers and students

### Ideal for Educational Budgets
- Very low water consumption making it ideal for situations where water would be expensive
- Low maintenance requirements
- One year warranty as standard plus unrivalled technical support from Randox

### Flexibility
- Reagent and sample carousel with 66 cooled user-defined positions to ensure on-board stability
- Reagent and sample carousel is removable
- User defined QC multi point rules
- Calibration options include 1 Point, 2 Point, Multi-point & Non-linearity method
- QC result search history

### Wide Test Menu for Research Projects
- Extensive test menu covering clinical chemistry, antioxidants, wine, food, nutrition, sports, cosmetics and veterinary assays
- Capable of analysing a variety of sample types such as serum, plasma, urine, cerebrospinal fluid, supernatants and ascites

### Robust, Reliable, Easy-to-Use
- Independent stirring system automatically rinsed with purified water to reduce carryover
- Online help guide available to assist user with analyser functions, troubleshooting and maintenance queries
The RX monaco is easy to use with a user friendly screen for ease of operation. This highly versatile, high-end product offers a wide range of routine and specialised tests at great value for money, and comes with excellent after sale service.

Keisha Terrier-Gallimore
Managing Director
Mediplus Diagnostics Laboratory
May Pen, Jamaica

Catalogue Code:

<table>
<thead>
<tr>
<th>RX5000</th>
<th>RX monaco analyser (benchtop)</th>
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<tbody>
<tr>
<td>RX5001</td>
<td>RX monaco analyser with stand</td>
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</table>
The RX daytona+ is a bench-top, fully automated, random access clinical chemistry analyser capable of performing routine and specialised testing and emergency STAT sampling. A compact and fully automated solution for clinical chemistry testing, the RX daytona+ is able to perform 270 tests per hour which, with use of an optional ISE unit increases to 450 tests per hour. The RX daytona+ is distinctly advantageous where minimal sample volumes are available. A sample volume as low as just 1.5μl can be utilised making the RX daytona+ ideal for research.

Main Features of the RX daytona+

- 270 photometric tests per hour/450 tests per hour with ISE (optional)
- Minimum reaction volume 100μl
- 72 semi-permanent cuvettes with cuvette check function
- 12 wavelengths generated via diffraction grating: 340, 380, 415, 450, 510, 546, 570, 600, 660, 700, 750 and 800nm
- Low water consumption of 5 litres per hour at maximum throughput
- Low reagent volume - R1: 20 - 250μl (1μl increments) R2: 20 - 180μl (1μl increments)
- Sample volume of just 1.5μl (0.1μl increments)
- Sample dead volume 100 μl / 50μl (paediatric)
- Reaction volume 100 μl - 350 μl

Optimum Performance

- Cuvette check function ensures only clean and viable reaction vessels are reused
- Built in inventory management system automatically reports remaining reagent volume
- Separate sample and reagent pipettes including liquid level sensors, crash protection and clot detection
- Dual 5 speed stirrers optimised for each assay ensuring better performance

Ideal for Educational Budgets

- Low water consumption making it ideal for situations where water would be expensive
- Utilises reagent volume from as low as 20μl enabling educational budgets to stretch further
- One year warranty as standard plus unrivalled technical support from Randox

Teaching Opportunities

- Extensive dedicated test menu offers greater choice for routine and specialised research studies
- 3 levels of password protection available enabling different levels of access for teachers, researchers and students

Excellent Functionality

- User friendly Microsoft Windows® based software
- Generation of Levey-Jennings charts, calibration curves and QC statistics

Wide Test Menu for Research Projects

- Extensive test menu covering clinical chemistry, antioxidants, wine, food, nutrition, sports, cosmetics and veterinary assays
- Analysis of a wide range of analytes from as little as 1.5μl of sample
- Capable of analysing a variety of sample types such as serum, plasma, urine, cerebrospinal fluid, supernatants and ascites

Robust, Reliable, Easy-to-Use

- Minimal maintenance required
- Integrated barcode readers for reagent and sample identification

Flexibility

- Reagent carousel with 50 cooled positions to ensure on-board stability
- Reagent and sample carousels are removable
- Option to use standard sample cups or paediatric cups for small sample volumes
- Calibration options include: Factor, Linear, Point to point, Log-logit, Exponential, Spline and Spline 2
“The panel of tests currently run by the DRNWL on the RX daytona+ is mainly for diabetes and associated areas (eg glucose, lipid profiles, ketones, NEFAs etc), but is steadily growing. As a central laboratory, we are often receiving requests to run new chemistries- the ease of adding these new tests means that deadlines can easily be met. Due to the flexibility of the RX daytona+, we have been able to support a large number of trials, from small student projects through to large multicentre studies.”

Mr Gareth Dunseath, Research Assistant
College of Medicine
University of Swansea, UK
The RX imola is a bench-top, fully automated, random access clinical chemistry analyser capable of performing routine and specialised testing and emergency STAT sampling. Capable of handling a medium to high throughput workload the RX imola is the ideal companion for research laboratories involved in large scale studies. A compact and fully automated solution for clinical chemistry testing, the RX imola is able to perform 400 tests per hour which, with use of the integrated ISE unit increases to 560 tests per hour. The RX imola can utilise sample volume as low as just 2μl, making it ideal for research studies.

Main Features of the RX imola
- 400 photometric tests per hour/560 tests per hour with ISE
- Minimum reaction volume 150μl
- 90 permanent Pyrex® cuvettes
- 12 wavelengths generated via diffraction grating: 340, 380, 415, 450, 510, 546, 570, 600, 660, 700, 750 and 800 nm
- Water consumption of 18 litres per hour
- Low reagent volume – R1: 150-350μl (1μl increments) R2: 20-250μl (1μl increments)
- Sample volume of just 2-35μl (0.1μl increments)
- Sample dead volume 100 μl / 50μl (paediatric)

Optimum Performance
- Built in inventory management system to monitor reagent volumes and remaining number of tests
- Dual micro-pipettes with liquid level sensors, clot and bubble detection
- Dual 5 speed stirrers optimised for each assay ensuring better performance

Excellent Functionality
- User friendly Microsoft Windows® based software
- Generation of Levey-Jennings charts, calibration curves and QC statistics

Wide Test Menu for Research Projects
- Extensive test menu covering clinical chemistry, antioxidants, wine, food, nutrition, sports, cosmetics and veterinary assays
- Capable of analysing a variety of sample types such as serum, plasma, urine, cerebrospinal fluid, supernatants and ascites

Ideal for Educational Budgets
- Engineer friendly layout makes servicing simple
- One year warranty as standard plus unrivalled technical support from Randox

Teaching Opportunities
- Capable of a medium to high throughput making the RX imola suited for medium to large scale research studies
- Extensive dedicated test menu offers greater choice for routine and specialised research studies
- 3 levels of password protection available enabling different levels of access for teachers, researchers and students

Flexibility
- Reagent carousel with 60 cooled positions to ensure on-board stability
- 20 cooled positions available for controls and calibrators
- Removable reagent and sample carousels
- Option to use standard sample cups or paediatric cups for small sample volumes
- Calibration options include: Factor, Linear, 2 Point, Point to point, Spline, Log-logit and Exponential.
- QC history can be viewed

Robust, Reliable, Easy-to-Use
- Low maintenance machine, no rear access required
- Integrated barcode readers for reagent and sample management

EXCELLENCE IN RESEARCH AND EDUCATION
“The combination of user-friendliness, reliability and high performance of the analysers along with the best quality and diversity of reagents available, and expert maintenance service is simply unparalleled. Randox have been the single-most impactful technological contribution to the success of our clinical pathology service and our research biochemistry programmes.”

Peter O’Brien, Head of Clinical Pathology
Michael Garrett, Chief Technical Officer
University College Dublin, Veterinary Hospital, Ireland

Catalogue Code: RX4900
RX imola analyser (comes with ISE as standard)
Antioxidants may be of interest across all therapeutic areas of research, but most especially of interest to Food, Nutrition & Metabolism and Sport & Exercise Science.

Ransod
Superoxide Dismutase (SOD) levels have been found to decrease with age, while the level of free radicals in the body has been found to increase, suggests this enzyme plays a major role in the ageing process. As such there is great interest in determining the potential of Superoxide Dismutase in anti-ageing treatments and cosmetics. Analysis of SOD levels can be used as a research tool in the assessment of new therapies and in determining the therapeutic efficacy and antioxidant potential of drugs.

Glutathione Reductase
Glutathione reductase can be used in the research of screening hereditary erythrocyte GR deficiencies and deficiencies of the vitamin riboflavin. Other areas of research include cystic fibrosis, liver diseases and malignant liver cancer.

Total Antioxidant Status (TAS)
Randox total antioxidant status kit enables assessment of the integrated antioxidant system which encompasses all biological components with antioxidant activity. A large number of research papers have been published using the Randox method making it a reliable and well respected test assay.

Randox offers one of the most complete lipid profiles available on the market, and Randox offers excellent test methods, bringing trustable results to the research field. The lipid profile consists of conventional assays together with emerging biomarkers associated with cardiovascular disease. Highlighted below are some of the assays which are particularly relevant to research studies. These assays will be of interest for nutritional studies as well as those involved in sports training where researchers want to observe the effect of a nutritional and exercise plan upon lipids in the blood.

Lp(a)
- High levels are known to occur in individuals with an otherwise normal lipid profile
- High levels thought to contribute to an increased risk of CVD independent of other lipid results
- Levels of Lp(a) are genetically determined and vary with ethnic population
- In families with a history of premature CVD, or where patients are classified as moderate/high risk this assay is recommended by the following societies:
  - European Atherosclerosis Society (EAS)
  - National Cholesterol Education Programme
  - National Academy of Clinical Biochemistry

sLDL
- Individuals with a predominance of sLDL have a 3-fold increased risk of myocardial infarction.
- Levels of Lp(a) are useful in cases of diabetes, hypertension, CVD and hyper/dyslipidemia

Apolipoproteins and the ratio between them are useful in the assessment of cardiovascular risk. They have particular value in monitoring lipid lowering therapies where HDL-C and LDL-C alone are less predictive of future cardiovascular events.

Apo A-1a
- Removes excess cholesterol from extra-hepatic tissue
- Non-atherogenic, shows an inverse relationship to CVD risk
- Individuals with CVD generally have reduced levels of Apo A-I and increased levels of Apo B

Apo A-II
- Major constituent of HDL cholesterol
- Important role in reversing cholesterol transport & lipid metabolism
- Increased production of Apo A-II promotes atherosclerosis

Apo B
- Main protein in LDL cholesterol and is the ligand concerned with the uptake of cholesterol
- Elevated levels of Apo B indicate an increased level of CVD even when total & LDL levels are normal
- No Apo A-I to Apo-B ratio is often used to determine CVD risk as an alternative to the total cholesterol/HDL cholesterol ratio

Apo C-II
- This Apo is a co-factor for lipoprotein lipase
- Apo C-II deficiency has been linked with hypertriglyceridemia

Apo C-III
- Modulates the uptake of triglyceride-rich lipoproteins by the LDL receptor related protein through inhibition of lipoprotein lipase
- Elevated levels are associated with primary and secondary hypertriglyceridemia
- Genetically determined C-III deficiency has shown to increase the rate of triglyceride clearance from plasma by 6 to 7-fold
- Higher levels have been reported in type 2 diabetes, hyperbilirubinemia, kidney deficiency and decreased thyroid function

Apo E
- A deficiency gives rise to high serum cholesterol and triglyceride levels which leads to premature atherosclerosis
- Apo E affects the formation of atherosclerotic lesions by inhibiting platelet aggregation
Ransel (Glutathione Peroxidase & Selenium Status)
Ransel is used for the quantitative in vitro determination of Glutathione Peroxidase in whole blood. The Randox Ransel kit measures glutathione peroxidase which has a direct correlation with selenium levels which is useful in the measuring and monitoring of selenium deficiency and nutritional disorders. Many research papers have been published in veterinary journals as selenium deficient animals can develop the life threatening white muscle disease.

NEFA
In veterinary research, NEFA measurements can be used to indicate a negative energy balance especially in periparturient dairy cows. A negative energy balance can lead to problems in cattle including fatty liver disease, ketosis and infertility.

Fructosamine
A medium term indicator of diabetes, this assay is also used in metabolism research. Fructosamine is becoming more widely used in the diagnosis of diabetes in animals, and as such is of great importance in veterinary metabolic research.

Bile Acids
In veterinary research, the test is particularly useful in birds where other more commonly used liver tests correlate poorly with the presence of liver disease. Another important use is for the diagnosis of ragwort poisoning where toxic by-products cause cumulative liver damage without symptoms and if left untreated, irreversible damage occurs.

Canine CRP
CRP is a major acute phase protein in dogs with increased levels observed in several conditions including infectious diseases, immune-mediated diseases, neoplasia, inflammatory bowel disease and injury. This specifically veterinary assay comes in a convenient liquid ready to use format.

Antioxidants
Further antioxidant assays can be found under the Food, Nutrition & Metabolism section.

CRP- available as normal, full range and high sensitivity
Elevated CRP levels indicate an inflammatory response has been activated and levels above the normal range (>6mg/L) are used to diagnose and monitor rheumatic diseases and other inflammatory conditions. Recent research has however widened the clinical significance of CRP and measurement within the normal range can be used for risk assessment of cardiovascular disease, detection of infection in neonates and in early detection of renal allograft rejection.

Full Range CRP
Test for measurement of CRP levels within and outside the normal range (0.3-160 mg/l)

High Linearity CRP
Test for measurement of CRP levels outside the normal range (5-200 mg/l)

High Sensitivity CRP
Test for measurement of CRP levels within the normal range (0.477-10 mg/l)

Rheumatoid Factor
Research has shown that both environmental and genetic factors can affect the production of RF with various biological properties. Although they may be found in all immunoglobulin classes, the RF most frequently detected is the IgM type; present in about 75% of adult patients with RA and about 10% of children with juvenile RA. RF have also been observed in the serum of patients with lupus erythematosus, hepatitis, liver cirrhosis, syphilis and various other conditions; but the RF titre is much lower than in RA.

IgA
Measurement of IgA is used to diagnose diseases of the respiratory tract e.g. tuberculosis. Chron’s disease and early cirrhosis of the liver. It is also useful in monitoring therapy of IgA myeloma and evaluating IgA immunity. IgA in colostrum and milk is important in neonatal defence against infection.

IgM
IgM measurement has the following uses: to establish diagnosis and monitor therapy in Waldenström’s macroglobulinemia and plasma cell myeloma, to detect intra-uterine infection by measuring levels in newborn babies, diagnosis of primary biliary cirrhosis, viral hepatitis, rheumatoid arthritis and parasitic infections.

Complement C3
Decreased Complement C3 levels are important in determining inherited or acquired deficiencies. Conversely, levels may rise in a variety of inflammatory and necrotic disorders as part of the acute-phase plasma protein response.

Complement C4
Test for measurement of CRP levels within and outside the normal range (0.3-160 mg/l)
Glucose
Glucose, the primary source of energy for the body, is an essential test for sports & exercise science. The kit is liquid and ready-to-use making it convenient for your research. Randox produces kits for measuring glucose, the GOD-PAP method and the Hexokinase method using NAD+.

Lactate
An increased concentration of lactate in the blood is an important marker for anaerobic metabolism. A lyophilised version of this assay is available.

CK-NAC
This specialist assay measures the amount of creatine kinase (CK) in the blood which is released in increasing amounts when there is muscle damage. The Randox CK-NAC assay is available in both liquid and lyophilised versions.

Antioxidant and lipid assays may also be of interest.*

*see Food, Nutrition & Metabolism section & also Ransel under the Veterinary section
Acetaminophen
Acetic Acid
Acid phosphatase
Adiponecin
Albumin
Aldolase
Alkaline Phosphatase
Alpha-1 Acid Glycoprotein
Alpha-1 Antitrypsin
ALT
ALT (GPT)
Ammonia
Amphetamines
Amylase
Apolipoprotein A-I
Apolipoprotein AlII
Apolipoprotein B
Apolipoprotein AlII
Apolipoprotein AlII
Apolipoprotein E
ASO
AST (GOT)
Barbiturates
Benzodiazepines
Beta-2 Microglobulin
Bile Acids
Bilirubin (Direct & Total)
Calcium
Canine CRP
Cannabinoids
Carbamazepine
Ceruloplasmin
Chloride (Non-Direct)
Cholesterol
Cholinesterase
Cholinesterase (Butyryl)
CK-MB
CK-NAC
CO2 Total
Cocaine metabolite
Complement Component 3
Complement Component 4
Copper
Creatinine (Jaffe)
Creatinine Enzymatic
CRP
CRP Full Range (0.3-160mg/l)
CRP High Sensitivity
Cystatin C
Digoxin
Ecstasy
EDDP
Ethanol
Ferritin
Fructosamine
G-6-PDH
Gamma GT
Gentamicin
GLDH
Glucose
Glucose/Fructose
Glutamate
Glutamine
Glutathione Peroxidase (Ransel)
Glutathione Reductase
Glycerol
Haptoglobin
HbA1c/Hb
HDL Cholesterol (Direct)
Heart-Type Fatty Acid Binding Protein (H-FABP)
Homocysteine
Hydroxybutyrate (Ranbut)
IgA
IgE
IgG
IgM
Iron
Lactate
LAP
LDH
LDL Cholesterol (Direct)
Lipase
Lipoprotein (a)
Lithium
L-Lactic Acid
Magnesium
Malic Acid
Methadone
Microalbumin
Myoglobin
NEFA (Non-Esterified Fatty Acids)
Opiates
Pancreatic Amylase
Phenobarbital
Phenytoin
Phosphorus
Potassium (Non-Direct)
Rheumatoid Factor
Salicylate
sLDL
Sodium (Non-Direct)
Superoxide Dismutase (Ransod)
Theophyline
TIBC
Total Antioxidant Status
Total Protein
Transferrin
Transthyretin (Prealbumin)
Triglycerides
TxB Cardio
Urea
Uric Acid
Urinary Protein
Valproic Acid
Zinc