GL5 Fast Multi-Assay Analyser

for Clinical and Research Applications

Pre-programmed with Alcohol, Cholesterol, Glucose, Lactate, plus a spare channel for use with other Analox Oxidase chemistries*

APPLICATION AREAS

- Clinical Research
- Alcohol Research
- Metabolic Studies
- Biochemical Research
- Sports Medicine Research

MAIN FEATURES

- Plasma, serum and other aqueous solutions or whole blood via Analox collection systems
- Small sample sizes from 2.5 - 10 µl
- Printed results in under 20 seconds
- No sample turbidity or opacity errors
- Simple YES/NO operation
- Fully sterilizable fluid pathways
- Data output facility
- Compact size
- Fully portable version available

PRINCIPLE OF OPERATION

Lactate: In the presence of molecular oxygen, lactate is oxidised by the enzyme Lactate Oxidase (LOD) to pyruvate and hydrogen peroxide,

$$\text{L-Lactate} + O_2 \xrightarrow{\textit{Lactate Oxidase (LOD)}} \text{Pyruvate} + H_2O_2$$

Under the conditions of the assay, the rate of oxygen consumption is directly proportional to the L-lactate concentration.

Glucose: In the presence of molecular oxygen, β-D-glucose is oxidised by the enzyme glucose oxidase (GOD) to gluconic acid and hydrogen peroxide,

$$\beta\text{-D-Glucose} + O_2 \xrightarrow{\textit{Glucose Oxidase (GOD)}} \text{D-Gluconic acid} + H_2O_2$$

Under the conditions of the assay, the rate of oxygen consumption is directly proportional to glucose concentration.

ANALYTICAL PERFORMANCE

		Accuracy	Linearity	Precision (Within Run)
Glucose	>	i) Method comparison vs Hexokinase: y(Analox) = 0.985x – 0.14 mmol/L, r = 0.999, n = 156 ii) Method comparison vs Beckman: y(Analox) = 1.005x – 0.07 mmol/L, r = 0.999, n = 123 iii) Method comparison vs YSI: y(Analox) = 1.008x – 0.01 mmol/L, r = 0.999, n = 97	30.0 mmol/L (540 mg/dl) for 10 µl samples; 50.0 mmol/L (900 mg/dl) for 5 µl samples	C.V. of 1.0 % @ 5 mmol/L (plasma) C.V. of 1.4 % @ 10 mmol/L (plasma) C.V. of 0.85 % @ 12 mmol/L (whole blood)
Alcohol	>	i) Method comparison for whole blood (neutralised PCA extract) vs GC: y (Analox) = 1.039x + 0.28 mmol/L, r = 0.991, n = 27 ii) Urine Recovery Data: y (Analox) = 0.981x + 0.19 mmol/L, r = 0.999, n = 17	43.0 mmol/L (ca. 200 mg/dl) for 5 µl samples; 86.0 mmol/L (ca. 400 mg/dl) for 2.5 µl samples	C.V. of 2.5 % @ 18.5 mmol/L (ca. 85 mg/dl) (whole blood)
Lactate	>	i) Method comparison for whole blood vs YSI 23L: y (Analox) = 0.98x + 0.055 mmol/L, r = 0.9991, n = 56 ii) Method comparison for lysed whole blood vs classical PCA extract spectrophotometric: y (Analox) = 0.99x - 0.05 mmol/L, r = 0.992, n = 24	10 mmol/L (ca. 90 mg/dl) for 7 µl samples; 14 mmol/L (ca. 126 mg/dl) for 5 µl samples	C.V. of 2 % @ 2.5 mmol/L
Cholesterol	>	Method comparison vs Manual Enzymatic: y (Analox) = 0.98x + 0.04 mmol/L, r = 0.988, n = 142	10.0 mmol/L (387 mg/dl)	C.V. of 1 % @ 5 mmol/L (194 mg/dl)

* Other Analox oxidase chemistries suitable for use on the GL5 include: 3-Hydroxybutyrate, glycerol, triglycerides.

INSTRUMENT SPECIFICATIONS

Method	>	Enzymatic oxygen-rate	Statistical Programmes	>	Sequential, giving mean, S.D and C.V.
Sensor	>	Clark-type amperometric oxygen electrode	Interface	>	Serial data port, optional Windows software available
Sensitivity	>	0.1, or 0.01, selectable			
Reaction Temperature	>	30°C	Power	>	100-250V AC, 50-60Hz, 12-15V DC, 60VA
Display	>	32 character backlit LCD	Dimensions	>	Width 23cm, (9 ins) x Depth 29cm, (11¼ ins) x Height 15cm, 6¼ ins
Printer	>	16 column dot matrix, 1 line/sec	Weight	>	3.8 kg, 8 lb 6 oz Portable Model 5.9 kg, 13 lb

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