SPECTRUM

The Creative Approach to Bioscience

Haemoglobin
Drabkin's Solution

REF: 612 001 (2 x 50 ml) **1000 test**
REF: 612 002 (2 x 100 ml) **2000 test**

SYMBOLS IN PRODUCT LABELLING

EC REP	Authorised Representative		Use by/Expiration Date
IVD	For in-vitro diagnostic use		CAUTION. Consult instructions for use
LOT	Batch Code/Lot number		
REF	Catalogue Number		Manufactured by
	Consult instructions for use		(Xi) - Irritant
	Temperature Limitation		

Intended Use

Spectrum Diagnostics haemoglobin reagent is intended for the in-vitro quantitative, diagnostic determination of haemoglobin in human blood .

Background

Haemoglobin (Hb) is the red pigmented protein located in the erythrocytes and consists of four subunits . Its main function is the transport of oxygen and carbon dioxide in blood . In normal human adults , at least 96 % of the haemoglobin is HbA . HbA2 is usually about 2.5 – 3 % of total haemoglobin . Fetal haemoglobin (HbF) predominates during fetal life and diminishes rapidly during the first year of postnatal life . In normal adults less than 1 % is HbF.Blood haemoglobin concentration may be diminished as a consequence of haemorrhage or haemolysis or as a result of impaired blood formation in the bone marrow .

Method

Colorimetric method using Drabkin's solution .

Assay Principle

Haemoglobin is oxidized by potassium ferricyanide which is converted into stable cyanomethaemoglobin by potassium cyanide. The absorbance of the cyanomethaemoglobinis monitored at 540 nm .

Reagents

Reagent (R1)

Potassium ferricyanide	40	mmol/l
Potassium phosphate	50	mmol/l

Reagent (R2)

Potassium cyanide	77	mmol/l

Harmful (Xn): R20/21/22: Harmful by inhalation, in contact with skin and if swallowed. S7: Keep container tightly closed. S28.1: After contact with skin, wash immediately with plenty of water.
S45: In case of accident or if you feel unwell, seek medical advice immediately. The amount of cyanide present in one bottle of reagent is appreciably less than the minimum lethal dose for an adult. However, hydrogen cyanide is liberated by acidification. Never allow reagent to come in contact with acid.

For further information, refer to the Haemoglobin reagent material safety data sheet.

Reagents also contain non-reactive stablizers and surfactants

Precautions and Warnings

Pay attention to all precautions and warnings listed in Spectrum Diagnostics catalogue available upon request .Haemoglobin reagent contains cyanide which is poisonous. Avoid contact with skin and never pipette by mouth .

Deterioration

Failure to recover control values within the assigned range may be an indication of reagent deterioration.

Reagent Preparation Storage and Stability

All reagents are stable until expiration date stated on label when stored at 15 - 25 °C . Once opened, the reagent is stable for 6 months at the specified temperature if contamination is avoided. Prepare the working solution by diluting the reagents with bidistilled water as following :

1 ml(R1) + 1 ml (R2) + 48 ml H_2O

Working solution is stable for 3 months and should be light protected .

Specimen Collection and Preservation

Anticoagulated venous or capillary blood .Blood may be anti-coagulated with EDTA , or fluoride . Blood can be taken directly from a finger or heel puncture without use of anticoagulant .

Stability : 7 days at 2 – 8 °C
4 days at 20 – 25 °C

System Parameters

Wavelength	540 nm (Hg 546 nm)
Optical path	1 cm
Assay type	End-point
Direction	Increase
Sample : Reagent Ratio	1 : 250
e.g : Reagent volume	2.5 ml
Sample volume	10 µl
Reagent Blank	Low 0.00 AU High 0.2 AU
Temperature	20 – 25 °C
Incubation time	5 minutes
Zero adjustment	Against reagent blank

Procedure

Pipette into test tubes	
Working solution	2.5 ml
Blood sample	10 µl

Mix well and rinse the blood pipette several times with the reagents , and incubate for 5 minuts at 20-25 °C . Measure absorbance of specimen ($A_{specimen}$) against reagent blank .

Calculation

Haemoglobin concentration (g/dL) = $A_{specimen}$ x 36.77

Haemoglobin concentration (mmol/L)= $A_{specimen}$ x 22.83

Expected values

1 – 6 days	15.2 – 23.5 g/dL	(9.4 – 14.6 mmol/L)
14–50 days	10.3 – 16.6 g/dL	(6.4 – 10.3 mmol/L)
2 – 10 months	10.0 – 12.9 g/dL	(6.1 – 8.0 mmol/L)
1 – 15 years	11.0 – 14.3 g/dL	(6.8 – 8.8 mmol/L)
Adults Women	12.0 – 16.0 g/dL	(7.5 – 9.9 mmol/L)
Men	14.0 – 18.0 g/dL	(8.7 – 11.2 mmol/L)

Spectrum Diagnostics does not interpret the results of a clinical laboratory procedure ; interpretation of the results is considered the responsibility of qualified medical personnel . All indications of clinical significance are supported by literature references .

Performance Characteristics

Precision

Within run (Repeatability)

	Level 1	Level 2
n	20	20
Mean (g/dL)	10	14
SD	0.23	0.182
CV%	2.3	1.3

Run to run (Reproducibility)

	Level 1	Level 2
n	20	20
Mean (g/dL)	11.1	14.1
SD	0.322	0.296
CV%	2.9	2.1

Waste Disposal

This product is made to be used in professional laboratories.
Please consult local regulations for a correct waste disposal.
S56: dispose of this material and its container at hazardous or special waste collection point.
S57: use appropriate container to avoid environmental contamination.
S61: avoid release in environment. refer to special instructions/safety data sheets.

References

1. International committee for standardization in haematology. Brit. J. Haemat., 1967:13 (Suppl.) 71 .
2. Van Kampen, E. J. and Zijlstra, W.G., Clin. Chem. Acta.,1961:6:538 – 544 .
3. Tietz NW, Ed. Clinical guide to laboratory tests. 2ND ED. Philadelphia: WB Saunders; 1990:566 .

ORDERING INFORMATION

REAGENTS

CATALOG NO.	QUANTITY
612 001	2 x 50 ml
612 002	2 x 100 ml

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