Clinical Chemistry Reagents

Extension of HUMAN‘s High-Quality Reagent Line

Speciality & Routine Testing

- Homocysteine
- Cystatin-C
- Creatinine enzymatic
- Sodium/Potassium enzymatic

Flyer

Clinical Chemistry

Human

Diagnostics Worldwide

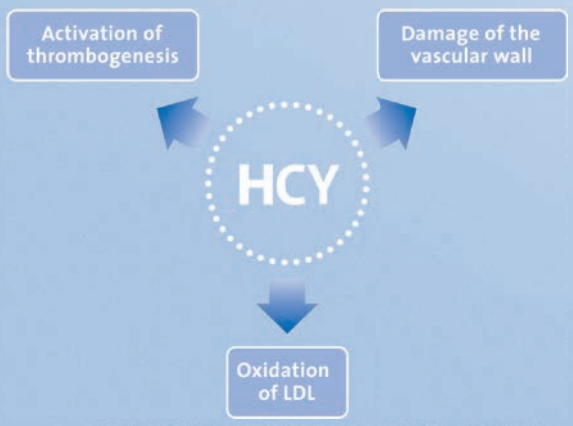
Clinical Chemistry Reagents

New kits for speciality testing

Homocysteine liquiUV

An independent risk factor for Cardiovascular and arteriosclerotic Disease (CVD)

Homocysteine (HCY) is an amino acid that is formed from the metabolism of dietary proteins. Elevated levels of homocystein are associated with a significantly higher risk for cardiovascular and peripheral arterial disease. Elevated homocysteine levels in blood are mostly associated with renal disease, low vitamin B and/or folate intake or inborn genetic enzyme defects in the metabolism of the essential amino acid methionine.



Assessment of risks of elevated homocysteine levels

L.Thomas, Labor und Diagnose, 8.edition (2012)

Favourable	< 10 µmol/l
Acceptable	10 – 12 µmol/l
Moderate	> 12 – 30 µmol/l
Elevated	> 30 – 100 mmol/l
Severe	> 100 µmol/l

State of the art of testing homocysteine

- Ready-to-use reagents, calibrators and controls
- 2-point calibration
- High sensitivity < 2 µmol/l
- Wide measurement range up to 40 µmol/l

Ordering information	REF
Homocysteine liquiUV	
Multipurpose complete kit (34 ml)	11140
HumaStar 600 system reagent (1 x 250 tests)	11140600
Homocysteine Calibrator Set (2 x 3 ml)	11145
Homocysteine Control Set (3 x 1.5 ml)	11143

Cystatin-C liquidirect

Accurate monitoring of kidney function

Numerous studies have shown that serum cystatin-C is superior to serum creatinine as a marker for glomerluar filtration. Measurement of serum cystatin-c concentration is a sensitive marker for diagnosis of chronic and acute kidney disease. In additon cystatin-c has gained importance for cardiac risk assessment.

Advantage of testing serum cystatin-c

- Higher diagnostic sensitivity than serum creatinine
- No influence by nutrition, muscle mass, age and gender
- No influence by inflammation
- Assessment of glomerular filtration rate (GFR) in the creatinine-blind area

Estimated GFR - equation for cystatin-c

Cystatin C-GFR (ml/min/1.73m^2) =

[84.69 * Cystatin C (mg/l)$^{-1,680}$][1]

[1] for children < 14 years result has to be multiplied with factor 1.384

Serum Reference Ranges

Male:	< 50 years	0.79 – 1.05 mg/l
	≥ 50 years	0.88 – 1.34 mg/l
Female:	< 50 years	0.75 – 0.99 mg/l
	≥ 50 years	0.85 – 1.35 mg/l

HUMAN offers state of the art cystatin-c testing

- Ready-to-use reagents, calibrators and controls
- 5-point calibration
- High sensitivity < 0.1 mg/l
- Minimal interference of bilirubin, hemoglobin, ascorbic acid and triglycerides

Ordering information	REF
Cystatin-C liquidirect	
Multipurpose reagent kit (40 ml)	11150
HumaStar 150 system reagent (2x 75 tests)	11150150
HumaStar 600 system reagent (2x 100 tests)	11150600
Cystatin-C Calibrator Set (2 x 3 ml)	11155
Cystatin-C Control Set (3 x 1.5 ml)	11153

Advanced Enzymatic Methods for Routine Parameters

Creatinine (enzym) liquicolor

Serum creatinine determination is a routine method for diagnosis of renal and muscle diseases and monitoring renal dialysis. Urine creatinine concentration is used as a calculation basis for other urine parameters. The most common creatinine testing procedure is Jaffé method.

Advantages of creatinine enzymatic vs creatinine Jaffé method

- Ready-to-use reagents
- No corrosive ingredients
- High sensitivity 0.1 mg/dl
- Excellent measurement range up to 40 mg/dl
- No interferences by bilirubin up to 40 mg/dl
- No interferences by total protein

CKD-EPI eGFR[1]

$$eGFR = 141 * \min(Scr/\kappa, 1)^{\alpha} * \max(Scr/\kappa, 1)^{-1.209} * 0.993^{Age} * 1.018 \text{ [if female]} * 1.159 \text{ [if black]}$$

Scr = serum creatinine mg/dl, κ = 0.7 if female, κ = 0.9 if male, α = -0.329 if female, α = -0.411 if male, min = the minimum of Scr/κ or 1, max = the maximum of Scr/κ or 1

[1] The CKD-EPI eGFR is more accurate for eGFR values > 60 ml/min than the Modification of Diet in Renal Disease study equation (MDRD formula) and could replace it for clinical use.

Reference ranges for serum creatinine

Male:	≤ 1.2 mg/dl (≤ 104 µmol/l)
Female:	≤ 1.0 mg/dl (≤ 84 µmol/l)

Ordering information

	REF
Creatinine (enzyme) liquicolor	
Multipurpose complete kit (80 ml)	10053
HumaStar 150 System reagent (2x 75 tests)	10053150
HumaStar 600 System reagent (1 x 300 tests)	10053600

Sodium liquicolor & Potassium liquiUV

The determination of electrolytes by ISE (ion selective electrodes) is the most common method. Alternatives such as photometric methods are available. The enzymatic electrolyte measurements offer certain advantages for the laboratory regarding user-friendliness and performance.

Advantages of the enzymatic electrolyte assays

- No sample pre-treatment
- Easy handling
- Ready-to-use reagents
- Fast – results within <5 minutes
- Good correlation with ISE
- No significant interferences by bilirubin, hemoglobin, lipids, calcium and magnesium
- Suitable measurement ranges: Sodium 100– up to 180 mmol/l, Potassium 2–7 mmol/l

Reference ranges for serum and plasma

Sodium:	Serum/Plasma	135 – 155 mmol/l
Potassium:	Serum	3.6 – 5.5 mmol/l
	Plasma	4.0 – 4.8 mmol/l

Ordering information

	REF
Sodium liquicolor	
Multipurpose complete kit (40 ml)	10113
HumaStar 150 System reagent (1x 75 tests)	10113150
HumaStar 600 System reagent (1 x 250 tests)	10113600
Potassium liquiUV	
Multipurpose complete kit (40 ml)	10120
HumaStar 150 System reagent (1x 75 tests)	10120150
HumaStar 600 System reagent (1 x 250 tests)	10120600

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