

C3C-2

Tina-quant Complement C3c ver.2

Order information

REF	CONTENT	Analyzer(s) on which cobas c pack(s) can be used
03001938 322	Tina-quant Complement C3c ver.2 (100 tests)	System-ID 07 6560 0 COBAS INTEGRA 400 plus COBAS INTEGRA 800
11355279 216	Calibrator f.a.s. Proteins (5 × 1 mL)	System-ID 07 6557 0
11355279 160	Calibrator f.a.s. Proteins (5 × 1 mL, for USA)	System-ID 07 6557 0
10557897 122	Precinorm Protein (3 × 1 mL)	System-ID 07 9105 9
10557897 160	Precinorm Protein (3 × 1 mL, for USA)	System-ID 07 9105 9
11333127 122	Precipath Protein (3 × 1 mL)	System-ID 07 9106 7
11333127 160	Precipath Protein (3 × 1 mL, for USA)	System-ID 07 9106 7
05117003 190	PreciControl ClinChem Multi 1 (20 × 5 mL)	System-ID 07 7469 3
05947626 190	PreciControl ClinChem Multi 1 (4 × 5 mL)	System-ID 07 7469 3
05947626 160	PreciControl ClinChem Multi 1 (4 × 5 mL, for USA)	System-ID 07 7469 3
05117216 190	PreciControl ClinChem Multi 2 (20 × 5 mL)	System-ID 07 7470 7
05947774 190	PreciControl ClinChem Multi 2 (4 × 5 mL)	System-ID 07 7470 7
05947774 160	PreciControl ClinChem Multi 2 (4 × 5 mL, for USA)	System-ID 07 7470 7
20756350 322	NaCl Diluent 9 % (6 × 22 mL)	System-ID 07 5635 0

English

System information

Test C3C-2, test ID 0-260

Intended use

In vitro test for the quantitative immunological determination of human complement C3c in serum and plasma on COBAS INTEGRA systems.

Summary^{1,2,3,4}

Activation of the complement system takes place via a classical and an alternative route. The two pathways come together in a joint terminal path. As complement factor C3 is a factor common to both pathways, the concentration of C3 and its degradation products (including C3c) can be evaluated as a parameter for activation of the complement system. Lowered values are indicative of activation. Additional differentiation can be made by determining C4. If the C4 level is normal, then activation of the alternative route is likely. Depressed values are observed in a number of inflammatory and infectious diseases. Primary causes are systemic lupus erythematosus (SLE), rheumatoid arthritis, subacute bacterial endocarditis, viremia, parasitic infections or bacterial sepsis. A considerable decrease in C3 can be found in patients with partial lipodystrophy or membranoproliferative glomerulonephritis when the C3-nephritis factor is present.

As an acute phase protein, C3 is produced to an increased extent during inflammatory processes. It is elevated in systemic infections, non-infectious chronic inflammatory conditions (primarily chronic polyarthritis) and physiological states (pregnancy). The elevation rarely exceeds twice the normal value and can mask a reduction in the current consumption.

A variety of methods, such as nephelometry, radial immunodiffusion and turbidimetry, are available for the determination of complement factor C3.

Test principle²

Immunoturbidimetric assay

Human C3c forms a precipitate with a specific antiserum which is determined turbidimetrically at 340 nm.

Reagents - working solutions

R1 TRIS buffer: 100 mmol/L, pH 8.0; polyethylene glycol: 3.0 %; preservative

SR Anti-human C3c antibody (goat): dependent on titer; TRIS buffer: 33 mmol/L; preservative

R1 is in position B and SR is in position C.

Precautions and warnings

Pay attention to all precautions and warnings listed in Section 1 / Introduction of this Method Manual.

For USA: For prescription use only.

Reagent handling

Ready for use

Storage and stability

Shelf life at 2-8 °C

See expiration date on **cobas c** pack label

COBAS INTEGRA 400 plus system

On-board in use at 10-15 °C

6 weeks

COBAS INTEGRA 800 system

On-board in use at 8 °C

6 weeks

Specimen collection and preparation

For specimen collection and preparation only use suitable tubes or collection containers.

Only the specimens listed below were tested and found acceptable:

Serum

Plasma: Heparin (Li-, NH₄⁺) plasma

The sample types listed were tested with a selection of sample collection tubes that were commercially available at the time of testing, i.e. not all available tubes of all manufacturers were tested. Sample collection systems from various manufacturers may contain differing materials which could affect the test results in some cases. When processing samples in primary tubes (sample collection systems), follow the instructions of the tube manufacturer.

Samples and controls are automatically prediluted 1:21 (1+20) with NaCl solution by the instrument.

Centrifuge samples containing precipitates before performing the assay.

Stability:⁵

4 days at 20-25 °C

8 days at 4-8 °C

8 days at -20 °C

The degree of fragmentation of C3 to C3c depends on the age and storage conditions of the sample. For fresh samples the values obtained are found to be up to 25 % lower than those obtained for aged samples depending on the extent to which fragmentation has occurred.⁶

Materials provided

See "Reagents – working solutions" section for reagents.

Materials required (but not provided)

NaCl Diluent 9 %, Cat. No. 20756350 322, system-ID 07 5635 0 for automatic sample dilution and standard serial dilutions. NaCl Diluent 9 % is placed in its predefined rack position and is stable for 4 weeks on-board COBAS INTEGRA 400 plus/800 analyzers.

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Specific proteins

Assay

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator's manual for analyzer-specific assay instructions.

Application for serum and plasma

COBAS INTEGRA 400 plus test definition

Measuring mode	Absorbance
Abs. calculation mode	Endpoint
Reaction mode	D-R1-S-SR
Reaction direction	Increase
Wavelength A/B	340/659 nm
Calc. first/last	33/60
Typical prozone effect	> 13.6 g/L (> 1360 mg/dL)
Antigen excess check	No
Predilution factor	21
Unit	g/L

Pipetting parameters

		Diluent (H ₂ O)
R1	90 µL	
Sample	10 µL	10 µL
SR	17 µL	10 µL
Total volume	137 µL	

COBAS INTEGRA 800 test definition

Measuring mode	Absorbance
Abs. calculation mode	Endpoint
Reaction mode	D-R1-S-SR
Reaction direction	Increase
Wavelength A/B	340/659 nm
Calc. first/last	44/90
Typical prozone effect	> 13.6 g/L (> 1360 mg/dL)
Antigen excess check	No
Predilution factor	21
Unit	g/L

Pipetting parameters

		Diluent (H ₂ O)
R1	90 µL	
Sample	10 µL	10 µL
SR	17 µL	10 µL
Total volume	137 µL	

Calibration

Calibrator	Calibrator f.a.s. Proteins
Calibration dilution ratio	1:10, 1:20, 1:50, 1:100, 1:200, and 0 g/L performed automatically by the instrument
Calibration mode	Logit/log 5
Calibration replicate	Duplicate recommended
Calibration interval	Each lot and as required following quality control procedures.

Enter the assigned lot-specific C3c value of the undiluted calibrator, indicated in the package insert of the Calibrator f.a.s. Proteins.

Traceability: This method is standardized against an internal method traceable to CRM 470.

The reference preparation CRM 470 contains only the C3c fragment, whereas fresh serum samples contain mainly C3. In fresh serum samples lower C3c values have to be considered because the COBAS INTEGRA C3c test is directed against the C3c fragment.

Quality control

Reference range	Precinorm Protein or PreciControl ClinChem Multi 1
Pathological range	Precipath Protein or PreciControl ClinChem Multi 2
Control interval	24 hours recommended
Control sequence	User defined
Control after calibration	Recommended

For quality control, use control materials as listed in the "Order information" section. In addition, other suitable control material can be used.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

Follow the applicable government regulations and local guidelines for quality control.

Calculation

COBAS INTEGRA analyzers automatically calculate the analyte concentration of each sample. For more details, please refer to Data Analysis in the Online Help (COBAS INTEGRA 400 plus/800 analyzers).

Conversion factor: g/L × 100 = mg/dL

Limitations - interference

Criterion: Recovery within ± 10 % of initial value.

Serum/plasma

Icterus:⁷ No significant interference up to an I index of 60 for conjugated and unconjugated bilirubin (approximate conjugated and unconjugated bilirubin concentration: 1026 µmol/L or 60 mg/dL).

Hemolysis:⁷ No significant interference up to an H index of 1000 (approximate hemoglobin concentration: 621 µmol/L or 1000 mg/dL).

Lipemia (Intralipid):⁷ No significant interference up to an L index of 2000. There is poor correlation between the L index (corresponds to turbidity) and triglycerides concentration.

Rheumatoid factors: No significant interference.

Drugs: No interference was found at therapeutic concentrations using common drug panels.^{8,9}

γ-Globulin: Monoclonal gammopathy sera of the IgA or IgM type can interfere with the C3c determination.

High dose hook-effect: No false result occurs up to a C3c concentration of 13.6 g/L.

In very rare cases, gammopathy, in particular type IgM (Waldenström's macroglobulinemia), may cause unreliable results.¹⁰

For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

ACTION REQUIRED

Special Wash Programming: The use of special wash steps is mandatory when certain test combinations are run together on COBAS INTEGRA analyzers. Refer to the CLEAN Method Sheet for further instructions and for the latest version of the Extra wash cycle list.

Where required, special wash/carry-over evasion programming must be implemented prior to reporting results with this test.

Limits and ranges

Measuring range

0.3-5.0 g/L (30-500 mg/dL)

Determine samples having higher concentrations via the rerun function. Dilution of samples via the rerun function is a 1:2 dilution. Results from samples diluted using the rerun function are automatically multiplied by a factor of 2.

Determine samples having lower concentrations via the rerun function. For samples with lower concentrations, the rerun function reduces the sample predilution factor to 10.5. The results are automatically multiplied by the reduced predilution factor.

Lower limits of measurement

Lower detection limit of the test:

0.3 g/L (30 mg/dL)

The lower detection limit represents the lowest measurable analyte level that can be distinguished from zero. It is calculated as the value lying 3 standard deviations above that of a zero sample (zero sample + 3 SD, repeatability, n = 21).

Expected values

Adults 0.9-1.8 g/L (90-180 mg/dL)*

* Reference range according to CRM 470 protein standardization.¹¹

Each laboratory should investigate the transferability of the expected values to its own patient population and if necessary determine its own reference ranges.

Specific performance data

Representative performance data on the COBAS INTEGRA analyzers are given below. Results obtained in individual laboratories may differ.

Precision

Precision was determined using human samples and controls in an internal protocol with repeatability (n = 21) and intermediate precision (1 aliquot per run, 1 run per day, 21 days). The following results were obtained:

	Level 1	Level 2
Mean	0.43 g/L (43 mg/dL)	1.92 g/L (192 mg/dL)
CV repeatability	1.5 %	0.9 %

	Level 1	Level 2
Mean	0.52 g/L (52 mg/dL)	2.30 g/L (230 mg/dL)
CV intermediate precision	6.0 %	2.3 %

Method comparison

C3c values for human serum samples obtained on a COBAS INTEGRA 400 analyzer using the COBAS INTEGRA Tina-quant Complement C3c ver.2 reagent (C3C-2) (y) were compared with those determined using the corresponding reagent on a Roche/Hitachi 917 analyzer (x) and with those determined on a COBAS INTEGRA 400 analyzer using the previous reagent COBAS INTEGRA Complement C3c (x).

	Roche/Hitachi 917 analyzer	COBAS INTEGRA 400 analyzer
Sample size (n)	277	102
Corr. coefficient (r)	0.988	0.994
Linear regression	$y = 0.98x + 0.107 \text{ g/L}$	$y = 1.15x + 0.013 \text{ g/L}$
Passing/Bablok ¹²	$y = 0.99x + 0.099 \text{ g/L}$	$y = 1.15x + 0.008 \text{ g/L}$

The sample concentrations were between 0.0 and 3.0 g/L (0-300 mg/dL).

References

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A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

Symbols

Roche Diagnostics uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard:

CONTENT	Contents of kit
→	Volume after reconstitution or mixing
GTIN	Global Trade Item Number

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