04489403500V13.0

ASLOT

cobas®

Tina-quant Antistreptolysin O

Order information

REF		CONTENT		Analyzer(s) on which **cobas c** pack(s) can be used
04489403190	04489403500	Tina-quant Antistreptolysin O, 150 tests	System-ID 07 6865 0	**cobas c** 311, **cobas c** 501/502

Materials required (but not provided):

03555941190	C.f.a.s. PAC (3 x 1 mL)	Code 589	
10557897122	Precinorm Protein (3 x 1 mL)	Code 302	
11333127122	Precipath Protein (3 x 1 mL)	Code 303	
05117003190	PreciControl ClinChem Multi 1 (20 x 5 mL)	Code 391	
05947626190	PreciControl ClinChem Multi 1 (4 x 5 mL)	Code 391	
05117216190	PreciControl ClinChem Multi 2 (20 x 5 mL)	Code 392	
05947774190	PreciControl ClinChem Multi 2 (4 x 5 mL)	Code 392	
04489357190	Diluent NaCl 9 % (50 mL)	System-ID 07 6869 3	

English

System information

For **cobas c** 311/501 analyzers:

ASLOT: ACN 037

For **cobas c** 502 analyzer:

ASLOT: ACN 8037

Intended use

In vitro test for the quantitative immunological determination of antistreptolysin O in human serum and plasma on **cobas c** systems.

Summary

Antistreptolysin O (ASO) measurements, performed with this assay in human serum and plasma, are used as an aid in the diagnosis of antecedent group A streptococcus infection, which can be associated with post-infectious complications.

Group A streptococcus (GAS; Streptococcus pyogenes) is a Gram-positive, β-haemolytic bacterium which most commonly infects the throat or skin.[1,2] The ability of GAS to overcome innate and acquired immune mechanisms present in saliva allows the bacterium to remain viable for a long period.[1] Severe GAS infection results from the ability of the bacterium to migrate to normally sterile sites, such as the bloodstream and deep tissues.[1] Here, the interaction between host and pathogen factors leads to tissue destruction, bacterial dissemination and hyperinflammation.[1] Immunological defense reactions can be induced by several metabolites of the β-hemolyzing streptococci, which act as exogenous toxins for the human organism.[1] The most clinically important antibody reactions are found against streptolysin O, streptococcal deoxyribonuclease B, hyaluronidase and streptokinase. Determination of the antistreptolysin O antibody level is widely adopted to obtain useful information on preceding streptococcal infection.[2,3]

GAS is the cause of a wide range of acute, common pyogenic infections, including skin diseases or tonsillopharyngitis that may be followed by non-suppurative complications including acute rheumatic fever (ARF), rheumatic heart disease (RHD), poststreptococcal glomerulonephritis (PSGN), poststreptococcal reactive arthritis (PSRA) and pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection (PANDAS).[2,3,4,5,6,7]

Early diagnosis, efficient treatment and monitoring of the patient can reduce risks and aid in management of post-infection complications.[8] Antistreptococcal antibody titers reflect past immunologic events. Antistreptolysin O titers begin to rise approximately 1 week and peak 3 to 6 weeks after the infection.[5] Ideally, to optimize diagnosis of preceding GAS infection, two sequential ASO measurements should be performed.[2,9] A fourfold or greater rise between two successive serological samples (10-14 days apart) in ASO titer is indicative of recent GAS infection.[9]

Test principle[10,11,12,13]

Immunoturbidimetric assay.
Human antistreptolysin O antibodies agglutinate with latex particles coated with streptolysin O antigens. The precipitate is determined turbidimetrically.

Reagents - working solutions

R1 TRIS buffer: 170 mmol/L, pH 8.2

R2 Borate buffer: 10 mmol/L, pH 8.2; latex particles coated with streptolysin O: 2 mL/L

R1 is in position B and R2 is in position C.

Precautions and warnings

For in vitro diagnostic use for health care professionals. Exercise the normal precautions required for handling all laboratory reagents.

Infectious or microbial waste:
Warning: handle waste as potentially biohazardous material. Dispose of waste according to accepted laboratory instructions and procedures.

Environmental hazards:
Apply all relevant local disposal regulations to determine the safe disposal.

Safety data sheet available for professional user on request.

This kit contains components classified as follows in accordance with the Regulation (EC) No. 1272/2008:

Danger

H317	May cause an allergic skin reaction.
H360FD	May damage fertility. May damage the unborn child.
H412	Harmful to aquatic life with long lasting effects.

Prevention:

P201	Obtain special instructions before use.
P261	Avoid breathing mist or vapours.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P308 + P313	IF exposed or concerned: Get medical advice/attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.

Product safety labeling follows EU GHS guidance.
Contact phone: all countries: +49-621-7590

Reagent handling

Ready for use

ASLOT

Tina-quant Antistreptolysin O

cobas®

Carefully invert reagent container several times prior to use to ensure that the reagent components are mixed.

Storage and stability

Shelf life at 2-8 °C:	See expiration date on **cobas c** pack label.
On-board in use and refrigerated on the analyzer:	12 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: Li-heparin and K_2-EDTA plasma

The use of plasma can lead to a decrease in antistreptolysin O activity of approximately 7 %. For samples with an activity below 100 IU/mL the recovery in plasma can be either decreased or increased in comparison to serum.

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.

Centrifuge samples containing precipitates before performing the assay.

See the limitations and interferences section for details about possible sample interferences.

Stability:[14]	2 days at 20-25 °C
	8 days at 4-8 °C
	6 months at -20 °C (±5 °C)

Freeze only once.

Materials provided

See “Reagents – working solutions” section for reagents.

Materials required (but not provided)

- See “Order information” section
- General laboratory equipment

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.

The performance of applications not validated by Roche is not warranted and must be defined by the user.

Application for serum

cobas c 311 **test definition**

Assay type	2-Point End		
Reaction time / Assay points	10 / 10-19		
Wavelength (sub/main)	–/700 nm		
Reaction direction	Increase		
Unit	IU/mL		
Reagent pipetting		Diluent (H_2O)	
R1	124 µL	–	
R2	124 µL	–	
Sample volumes	*Sample*	*Sample dilution*	
		Sample	*Diluent (NaCl)*
Normal	2 µL	–	–
Decreased	4 µL	15 µL	168 µL
Increased	2 µL	–	–

cobas c 501 **test definition**

Assay type	2-Point End		
Reaction time / Assay points	10 / 16-28		
Wavelength (sub/main)	–/700 nm		
Reaction direction	Increase		
Unit	IU/mL		
Reagent pipetting		Diluent (H_2O)	
R1	124 µL	–	
R2	124 µL	–	
Sample volumes	*Sample*	*Sample dilution*	
		Sample	*Diluent (NaCl)*
Normal	2 µL	–	–
Decreased	4 µL	15 µL	168 µL
Increased	2 µL	–	–

cobas c 502 **test definition**

Assay type	2-Point End		
Reaction time / Assay points	10 / 16-28		
Wavelength (sub/main)	–/700 nm		
Reaction direction	Increase		
Unit	IU/mL		
Reagent pipetting		Diluent (H_2O)	
R1	124 µL	–	
R2	124 µL	–	
Sample volumes	*Sample*	*Sample dilution*	
		Sample	*Diluent (NaCl)*
Normal	2 µL	–	–
Decreased	4 µL	15 µL	168 µL
Increased	4 µL	–	–

Calibration

Calibrators	S1: H_2O
	S2: C.f.a.s. PAC
Calibration mode	Linear
Calibration frequency	2-point calibration • after reagent lot change • as required following quality control procedures

Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

Traceability: This method has been standardized against an internal standard material.

Quality control

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 c systems automatically calculate the analyte concentration of each sample.

Limitations - interference

Criterion: Recovery within ± 10 % of initial value at an antistreptolysin O activity of 200 IU/mL.

Icterus:[15] 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:[15] No significant interference up to an H index of 1000 (approximate hemoglobin concentration: 621 µmol/L or 1000 mg/dL).

Lipemia (Intralipid):[15] No significant interference up to an L index of 1000. There is poor correlation between the L index (corresponds to turbidity) and triglycerides concentration.

Rheumatoid factors: No significant interference from rheumatoid factors up to a concentration of 180 IU/mL.

High dose hook-effect: No false result occurs up to an antistreptolysin O concentration of 4000 IU/mL.

Drugs: No interference was found at therapeutic concentrations using common drug panels.[16,17]

In very rare cases, gammopathy, in particular type IgM (Waldenström's macroglobulinemia), may cause unreliable results.[18]

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 c** systems. The latest version of the carry-over evasion list can be found with the NaOHD-SMS-SmpCln1+2-SCCS Method Sheets. For further instructions refer to the operator's manual. **cobas c** 502 analyzer: All special wash programming necessary for avoiding carry-over is available via the **cobas** link, manual input is required in certain cases.

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

Limits and ranges

Measuring range

20-600 IU/mL

Determine samples having higher concentrations via the rerun function. Dilution of samples via the rerun function is a 1:6.1 dilution. Results from samples diluted using the rerun function are automatically multiplied by a factor of 6.1.

Lower limits of measurement

Lower detection limit of the test

20 IU/mL

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 the lowest standard (standard 1 + 3 SD, repeatability, n = 21).

Expected values

Adults	up to 200 IU/mL
Children	up to 150 IU/mL

In some cases of streptococcal infections, particularly skin infections, there may be no observable increase in the ASO titer. As antistreptolysin O is only detectable in 85 % of all patients with rheumatic fever, the determination of anti-streptococcal deoxyribonuclease antibodies and anti-streptococcal hyaluronidase antibodies may also be necessary.[19]

An appropriate evaluation of streptococcal infection is possible only if the test is repeated after one or two weeks.[20] Both clinical and laboratory findings should be correlated in reaching a diagnosis.

ASO levels are age dependent and change with geographic location and with the local frequency of streptococcal infections.[21,22]

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 analyzers are given below. These data represent the performance of the analytical procedure itself.

Results obtained in individual laboratories may differ due to heterogeneous sample materials, aging of analyzer components and mixture of reagents running on the analyzer.

Precision

Precision was determined using human samples and controls in an internal protocol with repeatability (n = 21) and intermediate precision (3 aliquots per run, 1 run per day, 21 days). The following results were obtained on the **cobas c** 501 analyzer.

Repeatability	*Mean*	*SD*	*CV*
	IU/mL	*IU/mL*	*%*
Precinorm Protein	145	2	1.6
Precipath Protein	263	3	1.1
Human serum 1	115	1	1.1
Human serum 2	246	2	0.8
Intermediate precision	*Mean*	*SD*	*CV*
	IU/mL	*IU/mL*	*%*
Precinorm Protein	151	4	2.6
Precipath Protein	277	6	2.2
Human serum 3	123	3	2.5
Human serum 4	256	4	1.7

The data obtained on **cobas c** 501 analyzer(s) are representative for **cobas c** 311 analyzer(s).

Method comparison

Antistreptolysin O values for human serum samples obtained on a **cobas c** 501 analyzer (y) were compared with those determined using the corresponding reagent on a Roche/Hitachi 917 analyzer (x).

Sample size (n) = 88

Passing/Bablok[23]	Linear regression
y = 0.987x - 0.268 IU/mL	y = 0.978x + 1.44 IU/mL
τ = 0.981	r = 0.999

The sample concentrations were between 28.8 and 594 IU/mL.

The data obtained on **cobas c** 501 analyzer(s) are representative for **cobas c** 311 analyzer(s).

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.

Any serious incident that has occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

The Summary of Safety & Performance Report can be found here: https://ec.europa.eu/tools/eudamed

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 for reconstitution
GTIN	Global Trade Item Number
Rx only	For USA: Caution: Federal law restricts this device to sale by or on the order of a physician.

CE 0123

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