FOR USE UNDER
EMERGENCY USE
AUTHORIZATION ONLY
Rx only

SARS-CoV-2-Sp1 IgG

FLUOROENZYMEIMMUNOASSAY FOR ANTI SARS-CoV-2-Sp1 IgG ANTIBODIES

FOR IN VITRO DIAGNOSTIC USE

INSTRUCTIONS FOR USE

CONTENTS

WARNING

- **For use under Emergency Use Authorization only.**
- **For prescription use only.**
- **For in vitro diagnostic use.**
- **The results of this semi-quantitative test should not be interpreted as an indication or degree of immunity or protection from infection.**

EliA uses a modular reagent system. All information needed to understand the use of the EliA tests can be found in the analyte-specific IfU and the corresponding EliA Control IfU.

INTENDED USE

The EliA SARS-CoV-2-Sp1 IgG test is a fluoroenzymeimmunoassay intended for qualitative and semi-quantitative detection of IgG antibodies to SARS-CoV-2 spike 1 in human serum and plasma (lithium heparin, tripotassium EDTA) using the Phadia 250 instrument. The EliA SARS-CoV-2-Sp1 IgG test is intended for use as an aid in identifying individuals with an adaptive immune response to SARS-CoV-2, indicating recent or prior infection. At this time, it is unknown for how long antibodies persist following infection and if the presence of antibodies confers protective immunity. The EliA SARS-CoV-2-Sp1 IgG test should not be used to diagnose or exclude acute SARS-CoV-2 infection. Testing is limited to laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C 263a, that meet requirements to perform moderate or high complexity tests.

Results are for the qualitative and semi-quantitative detection of SARS CoV-2 spike 1 IgG antibodies. IgG antibodies to SARS-CoV-2 are generally detectable in blood several days after initial infection, although the duration of time antibodies are present post-infection is not well characterized. Individuals may have detectable virus present for several weeks following seroconversion.

Laboratories within the United States and its territories are required to report all results to the appropriate public health authorities.

The sensitivity of the EliA SARS-CoV-2-Sp1 IgG test early after infection is unknown. Negative results do not preclude acute SARS-CoV-2 infection. If acute infection is suspected, direct testing for SARS-CoV-2 is necessary.

False positive results for EliA SARS-CoV-2-Sp1 IgG test may occur due to cross-reactivity from pre-existing antibodies or other possible causes.

Samples should only be tested from individuals that are 15 days or more post symptom onset.

The EliA SARS-CoV-2-Sp1 IgG test is only for use under the Food and Drug Administration's Emergency Use Authorization.

SUMMARY AND EXPLANATION OF THE TEST

SARS-CoV-2 is a novel corona virus that appeared in Wuhan in the Chinese province of Hubei in late 2019 and has since caused a pandemic with millions of infected people and an ever-increasing number of fatal disease courses.

The incubation phase after droplet infection ranges from 2–14 days.[1] The onset of Corona Virus Disease 2019 (COVID-19) symptoms generally starts within one week after infection.

Symptoms can vary from very mild (even unnoticed) to severe respiratory problems with need of intensive care and artificial respiration, up to fatal cases most often caused by an inflammatory reaction secondary to infection.[2] The virus is a member of the genus Betacoronaviridae and bears close resemblance to SARS-CoV-1 from 2003.[3] Similarity was also found to sarbecoviruses isolated from bats, driving forward the theory of its origin as a zoonotic transfer from animal to humans.[3,4]

The genus Betacoronavirus consists of enveloped single-strand RNA virus particles which all have 4 characteristical structure proteins in common: the nucleocapsid (N), the envelope (E), the membrane proteins (M) and the spike proteins (S), the latter being responsible for the unique coronavirus appearance as seen in electron micrographs.[5] The virus mediates docking to human cells by a high-affinity binding towards the extracellular angiotensin 2 converting enzyme, to which a sequence of the spike 1 protein of SARS-CoV-2 can bind with high-affinity.[6]

PRINCIPLES OF THE PROCEDURE

The EliA SARS-CoV-2-Sp1 IgG Wells are coated with recombinant SARS-CoV-2 spike 1 protein. If present in the patient's specimen, antibodies to SARS-CoV-2 spike 1 protein bind to their specific antigen.

After washing away non-bound antibodies, enzyme-labeled antibodies against human IgG antibodies (EliA IgG Conjugate) are added to form an antibody-conjugate complex. After incubation, non-bound conjugate is washed away and the bound complex is incubated with a Development Solution. After stopping the reaction, the fluorescence in the reaction mixture is measured. The higher the response value, the more specific IgG is present in the specimen. To evaluate test results, the response for patient samples is compared directly to the response for calibrators.

REAGENTS / MATERIAL

The EliA reagents are available as modular packages, each purchased separately. Apart from the EliA CoV Positive Control C1 250 and the EliA IgG/IgM/IgA Negative Control 250, all packages are required to carry out an EliA SARS-CoV-2-Sp1 IgG test.

The EliA SARS-CoV-2-Sp1 IgG Wells are packed in carriers which are stored in sealed aluminium foil bags containing a desiccant.

EliA SARS-CoV-2-Sp1 IgG Test-Specific Reagents

EliA SARS-CoV-2-Sp1 IgG Well (Art. No. 14-6663-01)

SARS-CoV-2-Sp1 IgG Well; short name: Gcs1	Coated with recombinant SARS-CoV-2 spike 1 protein	4 carriers (16 wells each); sufficient for 64 determinations	Ready for use; store dry at 2–8°C until expiration date

EliA CoV Positive Control C1 250 (Art. No. 83-1185-01)

Human blood preparation in buffer containing sodium azide (0.095%); symbol: pos	Control containing IgG antibodies to SARS-CoV-2 spike 1 protein	6 single-use vials (0.3 mL each); sufficient for 2 determinations per vial	Ready for use; store at 2–8°C until expiration date

EliA CoV Positive Control C1 250 is prepared from human blood preparation.

EliA IgG/IgM/IgA Negative Control 250 (Art. No. 83-1037-01)

Human blood preparation in PBS containing BSA, detergent and sodium azide (0.095% (w/v)); symbol: neg	Multiparameter control containing normal sera from healthy donors	6 single-use vials (0.3 mL each); sufficient for 2 determinations per vial	Ready for use; store at 2–8°C until expiration date

EliA IgG/IgM/IgA Negative Control 250 is prepared from selected pooled human blood preparations.

EliA Method-Specific Reagents (Phadia 250)

EliA Sample Diluent (Art. No. 83-1023-01)

Sample Diluent (yellow colored); PBS containing BSA, detergent and sodium azide (0.095% (w/v))	6 bottles (48 mL each)	Ready for use; store at 2–8°C until expiration date

EliA IgG Conjugate 50 (Art. No. 83-1017-01)

IgG Conjugate (blue colored); β-Galactosidase anti-IgG (mouse monoclonal antibodies) in PBS containing BSA and sodium azide (0.06% (w/v)); symbol: EI-G	6 wedge shaped bottles (5 mL each); sufficient for 6 x 50 determinations	Ready for use; store at 2–8°C until expiration date DO NOT FREEZE DO NOT REUSE

EliA IgG Conjugate 200 (Art. No. 83-1018-01)

IgG Conjugate (blue colored); β-Galactosidase anti-IgG (mouse monoclonal antibodies) in PBS containing BSA and sodium azide (0.06% (w/v)); symbol: EI-G	6 wedge shaped bottles (19 mL each); sufficient for 6 x 200 determinations	Ready for use; store at 2–8°C until expiration date DO NOT FREEZE DO NOT REUSE

EliA IgG Calibrator Strips (Art. No. 83-1015-01)

Human IgG (0, 4, 10, 20, 100, 600 µg/L); in PBS containing BSA, detergent and sodium azide (0.095% (w/v))	5 strips 6 single-use vials per strip (0.3 mL each); sufficient for one calibration curve (measured in duplicates)	Ready for use; store at 2–8°C until expiration date

Manufactured from human blood preparations.

EliA IgG Curve Control Strips (Art. No. 83-1016-01)

Human IgG (20 µg/L); in PBS containing BSA, detergent and sodium azide (0.095% (w/v)); symbol: CC-1	5 strips Each strip contains 6 x 0.3 mL CC-1 (measured in duplicates)	Ready for use; store at 2–8°C until expiration date

Manufactured from human blood preparations.

EliA IgG Calibrator Well (Art. No. 14-5509-01)

IgG Calibrator Well coated with mouse monoclonal antibodies; short name: Gcal	4 carriers (12 wells each); sufficient for 48 determinations	Ready for use; store dry at 2–8°C until expiration date

Phadia 250 General Reagents

Development Solution (Art. No. 10-9440-01)

Development Solution 0.01% 4-Methylumbelliferyl-β-D-galactoside, <0.0010% preservative*	6 bottles (17 mL each); sufficient for 6 x >170 determinations	Ready for use; store at 2–8°C until expiration date DO NOT FREEZE

Development Solution (Art. No. 10-9441-01)

Development Solution 0.01% 4-Methylumbelliferyl-β-D-galactoside, <0.0010% preservative*	6 bottles (11 mL each); sufficient for 6 x >110 determinations	Ready for use; store at 2–8°C until expiration date DO NOT FREEZE

Stop Solution (Art. No. 10-9442-01)

Stop Solution 4% Sodium Carbonate	6 bottles (119 mL each); sufficient for 6 x >560 determinations	Ready for use; store at 2–32°C until expiration date

Stop Solution (Art. No. 10-9479-01)

Stop Solution 4% Sodium Carbonate	6 bottles (65 mL each); sufficient for 6 x >292 determinations	Ready for use; store at 2–32°C until expiration date

Dilution Plates (Art. No. 12-3907-08)

MicroWell™ plates with 96 wells, 0.5 mL each	100 plates per package; sufficient for 100 x 96 samples	Ready for use DO NOT REUSE

* Preservative: mixture of 5-chloro-2-methyl-2H-isothiazol-3-one [EC no. 247-500-7] and 2-methyl-2H-isothiazol-3-one [EC no. 220-239-6] (3:1).

Washing Solution (Art. No. 10-9422-01/10-9202-01)

For information see separate Washing Solution package insert.

WARNINGS AND PRECAUTIONS

- For use under Emergency Use Authorization only.
- For in vitro diagnostic use.
- For prescription use only.
- The results of this semi-quantitative test should not be interpreted as an indication or degree of immunity or protection from infection.
- This test has not been FDA-cleared or -approved, but has been authorized for emergency use by FDA under an Emergency Use Authorization (EUA) for use by laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. 263a, that meet requirements to perform moderate or high complexity tests.
- This test has been authorized only for detecting IgG antibodies against SARS-CoV-2, not for any other viruses or pathogens.
- The emergency use of this test is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostic tests for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C § 360bbb 3(b)(1), unless the declaration is terminated or authorization is revoked sooner.
- Do not use reagents beyond their expiration dates.

- We do not recommend to pool reagents.
- Do not use if desiccant bag is missing or foilbag is damaged.
- Wear gloves while handling samples and reagents provided.
- Some of the reagents are manufactured from human blood components. The source materials have been tested by immunoassay for hepatitis B surface antigen, for antibodies to HIV1, HIV2 and hepatitis C virus and found negative. Nevertheless, all recommended precautions for the handling of blood derivatives should be observed. Please refer to Human Health Service (HHS) Publication No. (CDC) 93-8395 or local and national guidelines on laboratory safety procedures.

WARNING! Reagents contain sodium azide (NaN_3) as a preservative. NaN_3 may be toxic if ingested or absorbed by skin or eyes. NaN_3 may react with lead and copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. Please refer to decontamination procedures as outlined by CDC or other local and national guidelines.
Waste Bottle and ImmunoCAP/EliA Well Waste Container may be contaminated by potentially infectious material. Use appropriate safety measures and wear gloves.

Indication of Instability

Phadia Prime has built-in acceptance limits for the calibration curve and the curve control. EliA Wells are moisture sensitive. Any activity loss that might occur due to inappropriate handling can be detected using the appropriate EliA Control. For more information see the respective Phadia Instrument User Manual and Phadia Prime Reference Guide.

INSTRUMENT

The EliA SARS-CoV-2-Sp1 IgG test is to be used with the Phadia 250 instrument using Phadia Prime software.
The Phadia 250 instrument is designed to handle all steps of the test procedure from sample and reagent handling through the processing of results. The Phadia 250 is designed to execute the EliA specific test protocols and is capable of handling different solid phases and reagents by reading bar codes or manually entering digit codes. Reagents, samples, and EliA solid phases are loaded by the operator onto the instrument and test characteristics for each sample are entered. The start button is depressed, and the process begins. The total processing time is about 2.5 hours. At the end of the process, test results become available through the lab's LIS/LIMS system or by printed laboratory report.

SPECIMEN COLLECTION, HANDLING AND PREPARATION

The EliA SARS-CoV-2-Sp1 IgG test can be performed with serum and plasma (lithium heparin, tripotassium EDTA) specimens. Lipemic, hemolyzed or microbially contaminated samples may give poor results and should not be used.
- Undiluted samples should remain at room temperature for no longer than eight hours.[7]
- Undiluted samples can be stored at 2–8°C for 48 hours without degradation provided they do not become contaminated by bacteria or fungi and they should be frozen at -20°C with up to 1 freeze/thaw cycle for any long-term storage.[8]

Note: It is the responsibility of the individual laboratory to use all available references and/or its own studies to determine specific stability criteria for its laboratory. In general, laboratories should perform validation studies before implementing a change in specimen acceptance criteria.[7]

Sample Dilution

Samples must be diluted with EliA Sample Diluent. A 1:100 dilution of the samples is required for the EliA SARS-CoV-2-Sp1 IgG test. Samples can be diluted manually, but instrument dilution is recommended and is a default setting in the software.

PROCEDURE

Handling of EliA SARS-CoV-2-Sp1 IgG Well

In the storage chamber of the instruments, carriers are stable for up to 28 days. If you are not expecting to use them up within this time, the carriers should be unloaded and, for stability reasons, must be put back into the desiccant-containing foil bag directly after unloading. Because it is important to store the wells in dry conditions at 2–8°C, the bag must be properly resealed. If stored under these conditions, the shelf-life from the date of first opening is 9 months, if not limited by the expiry date stated on the carrier and foil bag.

Lot-specific barcode

Use the built-in barcode reader to enter the lot-specific information of EliA SARS-CoV-2-Sp1 IgG Well, EliA IgG Calibrator Well and EliA IgG Conjugate. In case of manual handling make sure to enter the characters below the barcode.

On-board stability of reagents

EliA Well	28 days (in Carrier Storage). 24 hours (in Carrier Loading Tray).
EliA Calibrator/Curve Control	28 days
EliA Conjugate	Single use. Open vials must not be stored.
EliA Sample Diluent	7 days Recap bottles every night.
Development Solution	5 days Recap bottles every night.
Stop Solution	14 days Recap bottles every night.
Washing Solution *(prepared solution)*	7 days Discard every seventh day and perform weekly maintenance according to the instrument user manual.

Volumes per determination

Reagent volumes per determination

Calibrator	90 µL
EliA IgG Conjugate	90 µL
Development Solution	90 µL
Stop Solution	200 µL

Sample volumes per determination

Manual dilution	90 µL of diluted sample
Instrument dilution (1:100)	20 µL of non-diluted sample

For tube-specific dead volumes see Instrument Reference Manual.

Reagent volumes per 200 determinations

Washing Solution	5-7 L*
Rinse Solution	5-6 L*

* The residual volume depends on the number of samples and dilution method used.

Procedural comments

- From one sample diluted by the instrument (1:100), up to 11 determinations can be made.
- When using software default, samples are run in single determination.
- Washing Solution must be at room temperature when used.
- The first result is available after approx. 2 hours and further results at one minute intervals afterwards. Up to 5 x 10 samples can be loaded continuously and are processed by random access.
- Incubations are automatically performed at 37°C (98.6°F).
- If you want to perform more than one test per patient, you can use the predefined test panels in Phadia Prime. For further information regarding the test panels, see Phadia Prime Reference Guide.
- For more information on patient sample testing, calibration, and testing controls, refer to the Phadia™ 250 User Manual (12-3904-01/EN Ed2.5).

CALIBRATION AND REFERENCE MATERIAL

The calibration curve is obtained with EliA IgG Calibrators which are run in duplicate. The curve is stored and subsequent tests are evaluated against the stored curve using only the EliA IgG Curve Control (run in duplicate).
The IgG Calibrators are traceable via an unbroken chain of calibrations to the International Reference Preparation (IRP) 67/86 of Human Serum Immunoglobulins A, G and M from World Health Organization (WHO).

A new calibration curve must be run when:

- The last calibration was made more than one month ago or
- A new lot of EliA IgG Conjugate is introduced or
- When the EliA IgG Curve Control is outside the specified limits (defined in Phadia Prime Software).

Results are given in arbitrary EliA Units/mL.

QUALITY CONTROL

Control Specimens

Good laboratory practice requires that quality control specimens should be included in every run. Any material used should be assayed repeatedly to establish mean values and acceptance ranges. EliA positive and negative controls (EliA CoV Positive Control C1 250 and EliA IgG/IgM/IgA Negative Control 250, respectively) are available for the quality control of the measurements and available to purchase separately.

CALCULATION AND INTERPRETATION OF RESULTS

Presentation of Results

Phadia 250 measures specific IgG concentrations in µg/L. By using a conversion factor given by the lot-specific code of the EliA SARS-CoV-2-Sp1 IgG Well, the results are automatically converted to EliA U/mL.

Interpretation of Test Results

The ranges (negative, equivocal, positive) recommended for the evaluation of the results are given in the table below.

Test	Unit	Negative	Equivocal	Positive, numeric value within the measuring interval	Positive, "> 204"
EliA SARS-CoV-2-Sp1 IgG	EliA U/mL	< 7	7 – 10	> 10	> 204

In case of equivocal results, we recommend retesting the patient within 2–4 weeks. For more information on QC management refer to the Phadia™ 250 User Manual (12-3904-01/EN Ed2.5).

LIMITATIONS

- This test should only be used for testing samples collected 15 days after symptom onset.
- The clinical applicability of semi-quantitative results is currently unknown and cannot be interpreted as an indication or degree of immunity nor protection from infection, nor compared to other SARS-CoV-2 antibody assays.
- A definitive clinical diagnosis should not be based on the results of a single diagnostic method, but should only be made by the physician after all clinical and laboratory findings have been evaluated.
- This device should not be used to diagnose or exclude acute SARS-CoV-2 infection. Direct testing for SARS-CoV-2 with a molecular assay should be performed to evaluate acute infection in symptomatic individuals.
- It is not known at this time if the presence of antibodies to SARS-CoV-2 confers immunity to infection.
- Performance has only been established with specimen types listed in the Intended Use. Other specimen types have not been evaluated and should not be used with this assay.
- Results obtained with this assay may not be used interchangeably with values obtained with different manufacturers' test methods.
- It is unknown for how long antibodies persist following SARS-CoV-2 infection. It is not known at this time if the presence of antibodies directed to SARS-CoV-2 confers immunity to re-infection.
- False positive results for EliA SARS-CoV-2-Sp1 IgG may occur due to cross-reactivity from pre-existing antibodies or other possible causes.
- A positive result may not indicate previous SARS-CoV-2 infection. Consider other information, including clinical history and local disease prevalence, in assessing the need for a second but different serology test to confirm an immune response.
- A negative result for an individual subject indicates the absence of detectable anti-SARS-CoV-2 antibodies. Negative results do not preclude SARS-CoV-2 infection and should not be used as the sole basis for patient management decisions. A negative result can

occur if the quantity of the anti-SARS-CoV-2 antibodies in the specimen is below the detection limits of the assay, or if the antibodies are not present during the stage of disease in which a sample is collected.
- Not to be used to determine SARS-CoV-2 infection in donated blood units. This test should not be used for blood donor screening.

CONDITIONS OF AUTHORIZATION FOR THE LABORATORY

The EliA SARS-CoV-2-Sp1 IgG test Letter of Authorization, along with the authorized Fact Sheet for Healthcare Providers, the authorized Fact Sheet for Patients, and authorized labeling are available on the FDA website: https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/vitro-diagnostics-euas. However, to assist clinical laboratories using the EliA SARS-CoV-2-Sp1 IgG test ("your product" in the conditions below), the relevant Conditions of Authorization are listed below:

- Authorized laboratories* using your product must include with test result reports, all authorized Fact Sheets. Under exigent circumstances, other appropriate methods for disseminating these Fact Sheets may be used, which may include mass media.
- Authorized laboratories using your product must use your product as outlined in the Instructions for Use. Deviations from the authorized procedures, including the authorized instruments, authorized clinical specimen types, authorized control materials, authorized other ancillary reagents and authorized materials required to use your product are not permitted.
- Authorized laboratories that receive your product must notify the relevant public health authorities of their intent to run your product prior to initiating testing.
- Authorized laboratories using your product must have a process in place for reporting test results to healthcare providers and relevant public health authorities, as appropriate.
- Authorized laboratories must collect information on the performance of your product and report to DMD/OHT7-OIR/OPEQ/ CDRH (via email: CDRH EUA Reporting@fda.hhs.gov) and Phadia AB (1-800-346-4364, Option 1) any suspected occurrence of false positive or false negative results and significant deviations from the established performance characteristics of your product of which they become aware.
- All laboratory personnel using your product must be appropriately trained in automated immunoassay techniques and use appropriate laboratory and personal protective equipment when handling this kit, and use your product in accordance with the authorized labeling. All laboratory personnel using the assay must also be trained in and be familiar with the interpretation of results of the product.
- Phadia AB, authorized distributors, and authorized laboratories using your product must ensure that any records associated with this EUA are maintained until otherwise notified by FDA. Such records will be made available to FDA for inspection upon request.

* The letter of authorization refers to, "Laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet requirements to perform moderate or high complexity tests" as "authorized laboratories".

PERFORMANCE CHARACTERISTICS

Cross-reactivity

Cross-reactivity was determined in accordance with CLSI (Clinical and Laboratory Standards Institute) Document EP07. The assay was evaluated for potential cross-reactivity using a total of 737 specimens containing antibodies to other pathogens and other disease states. No false positive results were observed with the potential cross-reactants listed in the following table:

Virus/Antibody positive	Number of tested samples	EliA SARS-CoV-2-Sp1 IgG positive
Anti-Nuclear autoantibodies (ANA)	5	0
Anti-HBV	5	0
Anti-HCV	5	0
Anti-Influenza A	62	0
Anti-Influenza B	73	0
Anti-Respiratory syncytial virus	81	0
Anti-Borrelia burgdorferi	5	0
Anti-Mycoplasma pneumoniae	83	0
Anti-EBV	9	0
Anti-CMV	5	0
Anti-HSV-1/2	5	0
Anti-Rubella	5	0
Anti-VZV	5	0
Anti-Human CoV OC43	5	0
Anti-Human CoV HKU1	5	0
Anti-Human CoV 229E	5	0
Anti-Human CoV NL63	5	0
Rheumatoid factor	5	0
Hypergammaglobulinemia	5	0
Anti-HIV	5	0
Anti-Chlamydia pneumoniae	46	0
Anti-Adenovirus	32	0
Anti-Enterovirus	25	0
Anti-Haemophilus influenzae	96	0
Anti-Parainfluenza	105	0
Anti-Legionella	16	0
Anti-Tuberculosis	3	0
Influenza vaccinated	5	0
Anti-Bordetella Pertussis	26	0

Clinical Agreement

Positive percent agreement and negative percent agreement were determined in accordance with CLSI Document EP12-A2.

Positive Percent Agreement

A total of 163 samples (serum and lithium heparin) from patients with a PCR-confirmed SARS-CoV-2 infection were tested with the EliA SARS-CoV-2-Sp1 IgG test. Positive percent agreement was estimated by days post symptom onset, and the results are shown in the table below. Positive percent agreement was 97.6% (80/82) (95% CI: 91.5% – 99.3%) in patient samples collected >15 days post symptom onset.

Days post onset of symptoms	Number of samples tested	EliA SARS-CoV-2-Sp1 IgG Positive	EliA SARS-CoV-2-Sp1 IgG Negative/ Equivocal	Positive Percent Agreement [%]	95% CI [%] Wilson-Score Method
0 – 7 days	26	4	19 / 3	15.4	6.2 – 33.5
8 – 14 days	55	32	20 / 3	58.2	45.0 – 70.3
≥15 days	82	80	2 / 0	97.6	91.5 – 99.3

Negative Percent Agreement

A set of 330 serum samples from apparently healthy blood donors representing the ethnic distribution in the U.S. and 10 serum samples from apparently healthy pregnant women were tested with the EliA SARS-CoV-2-Sp1 IgG test. All samples were collected before December 2019. Negative percent agreement was 99.4% (338/340) (95% CI: 97.9% – 99.8%).

Group	Number of samples tested	EliA SARS-CoV-2-Sp1 IgG Positive/ Equivocal	EliA SARS-CoV-2-Sp1 IgG negative	Negative percent agreement (95% CI) [%] Wilson-Score Method
Blood donors	330	1 / 1	328	
Pregnant women	10	0 / 0	10	
Total	340	1 / 1	338	99.4 (97.9 – 99.8)

Analytical Sensitivity

The Limit of Blank (LoB), Limit of Detection (LoD), and Limit of Quantitation (LoQ) were determined in accordance with the guidelines in CLSI EP17-A2 requirements.

The LoB corresponds to the highest measurement result that is likely to be observed for analyte-free samples with a probability of 95%. The LoB was estimated as the 95th percentile value from 60 measurements of analyte-free samples over several independent series. The LoB was determined to be 0.3 EliA EliA U/mL.

The LoD is the lowest concentration of IgG antibodies to SARS-CoV-2 in a sample that can be detected with a probability of 95%. LoD was calculated on the LoB and 60 measurements of low analyte samples. The LoD for EliA SARS-CoV-2-Sp1 IgG test was determined to be 0.7 EliA U/mL.

The LoQ is defined as the lowest amount of analyte in a sample that can be accurately quantified with a CV < 20%. The LoQ for EliA SARS-CoV-2-Sp1 IgG test was determined to be 0.7 EliA U/mL, based on 120 measurements of low analyte samples.

Measuring Range

The reportable range (Limit of Detection, upper limit) and the measuring range (Limit of Quantitation, upper limit) is from 0.7 to 204 EliA U/mL.

Only values above the LoQ can be regarded as valid semi-quantitative results. Results above the upper limit are reported as ">204".

Linearity

Four clinical serum samples and 1 lithium heparin plasma sample were used to prepare a dilution series comprised of at least 10 levels. Each level was tested with 4 replicates on 1 lot of EliA SARS-CoV-2-Sp1 IgG Well with 1 set of system reagents on the Phadia 250 instrument. Linearity was demonstrated for the interval of 0.7 to 204 EliA U/mL.

Taking into consideration the estimates of LoB, LoD, LoQ, precision, and linearity, the analytical measuring interval is 0.7 to 204 EliA U/mL.

Please note that due to differing binding characteristics of the antibodies in patient samples, not all samples can be diluted linearly within the measuring range.

Matrix Equivalency

Matrix equivalency was determined in accordance with the guidelines in CLSI EP35 requirements. Seven matched sample sets (serum, tripotassium EDTA plasma, and lithium heparin plasma) from the same donors were used for the matrix equivalency study. Samples contained SARS-CoV-2 IgG in negative, low positive and moderate positive concentrations. Samples were measured on a Phadia 250 instrument and matrix equivalency was determined by calculating the ratios of the concentrations obtained for the individual matrices. Results are shown in the following table:

Ratio	Mean Ratio	Ratio Range (min-max) for Individual Sample
K3 EDTA to Serum	0.99	0.94 – 1.07
Li-Heparin to Serum	1.00	0.90 – 1.06
Li-Heparin to K3 EDTA	1.01	0.92 – 1.04

Interferences

The following substances in concentrations corresponding to those indicated in undiluted samples were analyzed for interference with EliA SARS-CoV-2-Sp1 IgG: Bilirubin F/C (40 mg/dL), Lipemic factor (2000 mg/dL), Hemoglobin (1000 mg/dL), Rheumatoid factor IgM (100 IU/mL), Ibuprofen (21.9 mg/dL), Hydroxychloroquine (0.23 mg/dL), Losartan (1.14 mg/dL) and Amoxicillin (5.4 mg/dL). Analysis was performed according to CLSI EP07-A3. No interference could be observed.

Precision

To determine the precision of the assay, the variability was assessed in a study with 21 runs by examining 4 samples and positive and negative controls in 252 replicates on 3 instruments over 7 days. The data was calculated against the calibration curve from Day 1. The statistical evaluation was performed according to CLSI EP05-A3. The results are given in the table below.

Mean (EliA U/mL)	Within-Run		Between-Run		Between-Instrument		Total Imprecision	
	SD	%CV	SD	%CV	SD	%CV	SD	%CV
<0.7 (Neg. Control)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3.1	0.1	2.7	0.1	4.2	0.1	2.1	0.2	5.0
6.8	0.2	2.5	0.2	2.2	0.2	2.3	0.3	3.7
9.3	0.2	2.6	0.3	2.8	0.2	2.3	0.4	3.9
35.8 (Pos. Control)	0.8	2.2	0.8	2.2	1.5	4.2	1.9	3.2
129.3	4.0	3.1	2.7	2.1	5.4	4.2	7.9	4.5

WARRANTY

The performance data presented here was obtained using the procedure indicated. Any intentional change or modification in the procedure not recommended by Phadia AB may affect the results, in which event Phadia AB disclaims all warranties expressed, implied or statutory, including the implied warranty of merchantability and fitness for use.
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	Do not re-use		Contains sufficient for <*n*> tests
	Use-by date	IVD	*In vitro* diagnostic medical device
LOT	Batch code		Temperature limit
	Date of manufacture		Consult instructions for use
REF	Catalogue number		Biological risks
	Manufacturer	**Rx only**	For prescription use only

Full symbol glossary is available at: https://symbols_glossary.phadia.com

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Phadia 250

EliA™

Rx only

IgG/IgM/IgA Negative Control 250

FOR IN VITRO DIAGNOSTIC USE

DIRECTIONS FOR USE

INTENDED USE

EliA IgG/IgM/IgA Negative Control 250 is intended for laboratory use in monitoring the performance of in vitro measurement of autoantibodies with Phadia 250 using the EliA IgG or IgM or IgA method.

REAGENTS / MATERIAL

EliA IgG/IgM/IgA Negative Control 250 (Art. No. 83-1037-01)

Human serum in PBS containing BSA, detergent and sodium azide (0.095%); symbol: neg	Multiparameter control containing normal sera from healthy donors	6 single-use vials (0.3 mL each); sufficient for 2 determinations per vial	Ready for use; store at 2–8°C until expiration date

EliA IgG/IgM/IgA Negative Control 250 is prepared from selected pooled human sera.

Control Certificate

WARNINGS AND PRECAUTIONS

- For in vitro diagnostic use.
- Do not use reagents beyond their expiration dates.
- We do not recommend to pool reagents.
- Wear gloves while handling samples and reagents provided.
- Some of the reagents are manufactured from human blood components. The source materials have been tested by FDA approved immunoassay for hepatitis B surface antigen, for antibodies to HIV1, HIV2 and hepatitis C virus and found negative. Nevertheless, all recommended precautions for the handling of blood derivatives should be observed. Please refer to Human Health Service (HHS) Publication No. (CDC) 93-8395 or local and national guidelines on laboratory safety procedures.
- Caution: Federal Law restricts this device to sale by or on the order of a licensed practitioner.

WARNING! Reagents contain sodium azide (NaN_3) as a preservative. NaN_3 may be toxic if ingested or absorbed by skin or eyes. NaN_3 may react with lead and copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. Please refer to decontamination procedures as outlined by CDC or other local and national guidelines.
Waste Bottle and ImmunoCAP/EliA Well Waste Container may be contaminated by potentially infectious material. Use appropriate safety measures and wear gloves.

PROCEDURE

EliA IgG/IgM/IgA Negative Control 250 can be handled either as Quality Controls or as patient samples. Handling and software settings are summarized in the table below.

EliA IgG/IgM/IgA Negative Control 250	Software setting*	
	Identity	Predilution factor
EliA dsDNA, EliA Cardiolipin IgG, IgM, IgA, EliA β2-Glycoprotein I IgG, IgA	EliA Neg	10
EliA MPO^S, EliA β2-Glycoprotein I IgM, EliA Gliadin^{DP} IgA, EliA RF IgA, EliA SmD^P	EliA Neg	50
EliA anti-TPO	EliA Neg	200
other EliA Tests	EliA Neg	100

* The EliA IgG/IgM/IgA Negative Control 250 is prediluted and ready to use. The EliA IgG/IgM/IgA Negative Control 250 has to be defined by the user. The respective identity and predilution factors according to the table above have to be entered. For further information and instructions how to define a Quality Control see Phadia 250 User's Guide/Reference Manual.

EXPECTED VALUES

The acceptance ranges for the current lot are stated on the Control Certificate included in the respective EliA IgG/IgM/IgA Negative Control 250 kit.

WARRANTY

The performance data presented here was obtained using the procedure indicated. Any change or modification in the procedure not recommended by Phadia AB may affect the results, in which event Phadia AB disclaims all warranties expressed, implied or statutory, including the implied warranty of merchantability and fitness for use.
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Revision History

Version	Countries	Change
21	all, except US	Chapter "Procedure", Change of product name: EliA TPO → EliA anti-TPO
22	all, except US	Chapter "Procedure", insertion of new tests: EliA anti-TSH-R and EliA Parietal Cell Chapter "Expected Values", additional paragraph concerning the limit of detection
23	all, except US	Harmonization of texts and translations between DfUs/instruments.
23	all, except US	Chapter "Reagents/Material": "Human serum" replaced by "Human blood preparation" in table and table note.
23	all, except US	Chapter "Procedure": addition of LKM-1 Well.
23	DE/AT/CH	Merge German language versions (DE, AT, CH) into one German version.
23	UK, CZ, DK, DE/AT/CH, ES, FR, IT, NO, PL, PT, SE	Chapter "Intended Use": Addition of "TSH-R method".
23	CZ, DE, FR, NO, PT, PL, SE	Chapter Intended Use: Correction of translation.
23	NO	Chapter "Reagents/Material": addition of "single-use" to vial description.

Published 2020-01-24

FOR USE UNDER
EMERGENCY USE
AUTHORIZATION ONLY
Rx only

CoV Positive Control C1 250

FOR IN VITRO DIAGNOSTIC USE

INSTRUCTIONS FOR USE

INTENDED USE

EliA CoV Positive Control C1 250 is intended for laboratory use in monitoring the performance of in vitro measurement of antibodies directed to SARS-CoV-2 spike 1 protein using the EliA IgG method.
Laboratories within the United States and its territories are required to report all results to the appropriate public health authorities.

REAGENTS / MATERIAL

EliA CoV Positive Control C1 250 (Art. No. 83-1185-01)

Human blood preparation in buffer containing sodium azide (0.095%); symbol: pos	Control containing IgG antibodies to SARS-CoV-2 spike 1 protein	6 single-use vials (0.3 mL each); sufficient for 2 determinations per vial	Ready for use; store at 2–8°C until expiration date

EliA CoV Positive Control C1 250 is prepared from human blood preparation.

Control Certificate

WARNINGS AND PRECAUTIONS

- For use under Emergency Use Authorization only.
- For in vitro diagnostic use.
- For prescription use only.
- This product has not been FDA-cleared or -approved, but has been authorized for emergency use by FDA under an Emergency Use Authorization (EUA) for use by laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. 263a, that meet requirements to perform moderate or high complexity tests.
- This product has been authorized only for detecting IgG antibodies against SARS-CoV-2, not for any other viruses or pathogens.
- The emergency use of this product is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostic tests for detection and/or diagnosis of COVID-19 under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C § 360bbb 3(b)(1), unless the declaration is terminated or authorization is revoked sooner.
- Do not use reagents beyond their expiration dates.
- We do not recommend to pool reagents.
- Wear gloves while handling samples and reagents provided.
- Some of the reagents are manufactured from human blood components. The source materials have been tested by FDA approved immunoassay for hepatitis B surface antigen, for antibodies to HIV1, HIV2 and hepatitis C virus and found negative. Nevertheless, all recommended precautions for the handling of blood derivatives should be observed. Please refer to Human Health Service (HHS) Publication No. (CDC) 93-8395 or local and national guidelines on laboratory safety procedures.

WARNING! Reagents contain sodium azide (NaN_3) as a preservative. NaN_3 may be toxic if ingested or absorbed by skin or eyes. NaN_3 may react with lead and copper plumbing to form highly explosive metal azides. On disposal, flush with a large volume of water to prevent azide build-up. Please refer to decontamination procedures as outlined by CDC or other local and national guidelines.
Waste Bottle and ImmunoCAP/EliA Well Waste Container may be contaminated by potentially infectious material. Use appropriate safety measures and wear gloves.

PROCEDURE

EliA CoV Positive Control C1 250 can be handled either as Quality Controls or as patient samples. Handling and software settings are summarized in the table below.

EliA CoV Positive Control C1 250 used with	Software setting*
	Predilution factor
EliA SARS-CoV-2-Sp1 IgG	100

* The EliA CoV Positive Control C1 250 is prediluted and ready to use. It is predefined in the Phadia Prime Software. No additional software settings have to be done. If run as patient sample the respective predilution factors according to the table above have to be entered. For further information and instructions how to define a Quality Control see Phadia 250 User Manual.

EXPECTED VALUES

The acceptance ranges for the current lot are stated on the Control Certificate included in the respective EliA CoV Positive Control C1 250 kit. Good laboratory practice and CLIA guidelines recommend that quality control specimens of at least two levels should be performed every day. Any material used should be assayed repeatedly to establish mean values and acceptance ranges. GLP laboratories are to follow internal laboratory protocol if QC is out of range.

WARRANTY

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