ab108736 – Anti-Helicobacter pylori IgG Human ELISA Kit

Instructions for Use

For the quantitative measurement of IgG class antibodies against Helicobacter pylori in Human serum and plasma (citrate).

This product is for research use only and is not intended for diagnostic use.

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1. <u>BACKGROUND</u>

Abcam's anti-Helicobacter pylori IgG Human *in vitro* ELISA (Enzyme-Linked Immunosorbent Assay) kit is designed for the accurate quantitative measurement of IgG class antibodies against Helicobacter pylori in Human serum and plasma.

A 96-well plate has been precoated with Helicobacter pylori antigens to bind cognate antibodies. Controls or test samples are added to the wells and incubated. Following washing, a horseradish peroxidase (HRP) labelled anti-Human IgG conjugate is added to the wells, which binds to the immobilized Helicobacter pylori-specific antibodies. TMB is then catalyzed by the HRP to produce a blue color product that changes to yellow after adding an acidic stop solution. The density of yellow coloration is directly proportional to the amount of Helicobacter pylori IgG sample captured in plate.

Helicobacter pylorus is a spiral Gram-negative bacterium (2-6 - 5 µM in size, flagellated) which colonizes the Human gastric mucosa. The organism is found in the mucous layer and adheres to the surface mucous epithelium of the stomach but generally does not penetrate the gastric mucosa directly, instead, there is a secondary inflammatory response in the mucosa leading to chronic active gastritis. Helicobacter pylorus is the primary causative agent, in most cases, of peptic ulcers. Infection rate in Europe is about 30%-40%, worldwide about 50%. There is an inverse relationship between the presence of Helicobacter pylori infection and socioeconomic status. In developing countries, people acquire the infection at an early age such that by young adulthood as many as 90% of the population might have Helicobacter pylori gastritis. In developed western countries the prevalence of Helicobacter pylori gastritis is much lower. Under these conditions, the rate of acquisition is much slower (roughly 1% per annum) and the older one is, the more likely one is to be infected with the organism.

| Species	Disease	Mechanism of infection
Helicobacter pylori	Gastritis Duodenal and peptic ulcers Gastric cancer	The epidemiology of Helicobacter pylori suggests that transmission is via the oral route especially in areas with poor sanitation.

Infection may be identified by

- Histology: Giemsa, Warthin Starry or Genta stain / culture of antral biopsy specimens
- Enzymology: Detection of bacterial urease (urea breath test)
- Serology: Detection of antibodies

A positive antibody test implies active gastritis unless the patient has received a specific anti-H. pylori therapy previously. The advantage of serial ELISA testing is that, with prolonged follow up after therapy, patients can be classified as cured if their ELISA levels decrease significantly.

2. <u>ASSAY SUMMARY</u>

Capture Antigens
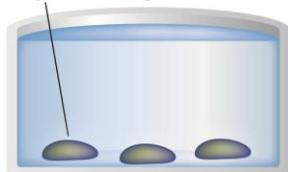
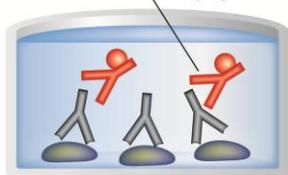Prepare all reagents, samples and controls as instructed.

Sample
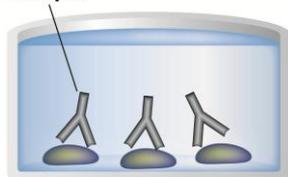
Add samples and controls to wells used. Incubate at 37ºC.

Labeled HRP-Conjugate

Wash each well and add prepared labeled HRP-Conjugate. Incubate at room temperature.

Substrate   **Colored Product**

After washing, add TMB substrate solution to each well. Incubate at room temperature. Add Stop Solution to each well. Read immediately.

3. <u>PRECAUTIONS</u>

Please read these instructions carefully prior to beginning the assay.

All kit components have been formulated and quality control tested to function successfully as a kit. Modifications to the kit components or procedures may result in loss of performance.

4. <u>STORAGE AND STABILITY</u>

Store kit at 2-8ºC immediately upon receipt.

Refer to list of materials supplied for storage conditions of individual components. Observe the storage conditions for individual prepared components in section 9. Reagent Preparation.

5. <u>MATERIALS SUPPLIED</u>

Item	Amount	Storage Condition (Before Preparation)
Helicobacter pylori (IgG) Coated Microplate (12 x 8 wells)	96 Wells	2-8ºC
IgG Sample Diluent***	100 mL	2-8ºC
Stop Solution	15 mL	2-8ºC
20X Washing Solution*	50 mL	2-8ºC
Helicobacter pylori anti-IgG HRP Conjugate**	20 mL	2-8ºC
TMB Substrate Solution	15 mL	2-8ºC
Helicobacter pylori IgG Standard A – 0 U/mL***	2 mL	2-8ºC
Helicobacter pylori IgG Standard B – 15 U/mL***	2 mL	2-8ºC
Helicobacter pylori IgG Standard C – 75 U/mL***	2 mL	2-8ºC
Helicobacter pylori IgG Standard D – 150 U/mL***	2 mL	2-8ºC

*   Contains 0.1 % Bronidox L after dilution

**   Contains 0.2 % Bronidox L

***   Contains 0.1 % Kathon

6. MATERIALS REQUIRED, NOT SUPPLIED

These materials are not included in the kit, but will be required to successfully utilize this assay:

- Microplate reader capable of measuring absorbance at 450 nm or 620 nm
- Incubator at 37°C
- Multi and single channel pipettes to deliver volumes between 10 and 1,000 µL
- Optional: Automatic plate washer for rinsing wells
- Vortex tube mixer
- Deionised or (freshly) distilled water
- Disposable tubes
- Timer

7. LIMITATIONS

- ELISA kit intended for research use only. Not for use in diagnostic procedures
- All components of Human origin used for the production of these reagents have been tested for anti-HIV antibodies, anti-HCV antibodies and HBsAg and have been found to be non-reactive. Nevertheless, all materials should still be regarded and handled as potentially infectious
- Use only clean pipette tips, dispensers, and lab ware.
- Do not interchange screw caps of reagent vials to avoid cross-contamination
- Close reagent vials tightly immediately after use to avoid evaporation and microbial contamination
- After first opening and subsequent storage check conjugate and control vials for microbial contamination prior to further use

- To avoid cross-contamination and falsely elevated results pipette patient samples and dispense conjugate, without splashing, <u>accurately</u> to the bottom of wells

8. <u>TECHNICAL HINTS</u>

- Avoid foaming or bubbles when mixing or reconstituting components
- Avoid cross contamination of samples or reagents by changing tips between sample, standard and reagent additions.
- Ensure plates are properly sealed or covered during incubation steps
- Complete removal of all solutions and buffers during wash steps is necessary for accurate measurement readings
- **This kit is sold based on number of tests. A 'test' simply refers to a single assay well. The number of wells that contain sample, control or standard will vary by product. Review the protocol completely to confirm this kit meets your requirements. Please contact our Technical Support staff with any questions**

9. REAGENT PREPARATION

Equilibrate all reagents, samples and controls to room temperature (18-25°C) prior to use.

9.1 **1X Washing Solution**

Prepare 1X Washing Solution by diluting 20X Washing Solution with deionized water. To make 200 mL 1X Washing Solution combine 10 mL 20X Washing Solution with 190 mL deionized water. Mix thoroughly and gently.

- All other solutions are supplied ready to use

10. SAMPLE COLLECTION AND STORAGE

- Use Human serum or plasma (citrate) samples with this assay. If the assay is performed within 5 days of sample collection, the specimen should be kept at 2-8°C; otherwise it should be aliquoted and stored deep-frozen (-20 to -70°C). If samples are stored frozen, mix thawed samples well before testing.

Avoid repeated freezing and thawing.

Heat inactivation of samples is not recommended

11. SAMPLE PREPARATION

- Before assaying, all samples should be diluted 1:100 with IgG Sample Diluent. Add 10 µL sample to 1 mL IgG Sample Diluent to obtain a 1:100 dilution. Mix gently and thoroughly.

12. PLATE PREPARATION

- The 96 well plate strips included with this kit are supplied ready to use. It is not necessary to rinse the plate prior to adding reagents
- Unused well strips should be returned to the plate packet and stored at 4°C
- For each assay performed, a minimum of 1 well must be used as a blank, omitting sample and conjugate from well addition
- For statistical reasons, we recommend each standard and sample should be assayed with a minimum of two replicates (duplicates)

13. <u>ASSAY PROCEDURE</u>

- **Equilibrate all materials and prepared reagents to room temperature prior to use.**

- **Please read the test protocol carefully before performing the assay. Reliability of results depends on strict adherence to the test protocol as described.**

- **If performing the test on ELISA automatic systems we recommend increasing the washing steps from three to five and the volume of washing solution from 300 µL to 350 µL to avoid washing effects.**

- **Assay all standards, controls and samples in duplicate.**

    13.1. Prepare all reagents, standards, and samples as directed in the previous sections.

    13.2. Remove excess microplate strips from the plate frame, return them to the foil pouch containing the desiccant pack, reseal and return to 4ºC storage.

    13.3. Add 100 µL of standards and diluted samples into appropriate wells. Leave one well for substrate blank.

    13.4. Cover wells with the foil supplied in the kit and incubate for 1 hour at 37°C.

    13.5. Remove the foil, aspirate the contents of the wells and wash each well three times with 300 µL of 1X Washing Solution. Avoid spill over into neighboring wells. The soak time between each wash cycle should be >5 sec. After the last wash, remove the remaining 1X Washing Solution by aspiration or decanting. Invert the plate and blot it against clean paper towels to remove excess liquid.

    Note: Complete removal of liquid at each step is essential for good assay performance.

    13.6. Add 100 µL Helicobacter pylori anti-IgG HRP Conjugate into all wells except for the blank well. Cover with foil.

    13.7. Incubate for 30 minutes at room temperature. Do not expose to direct sunlight.

13.8.   Repeat step 13.5.

13.9.   Add 100 µL TMB Substrate Solution into all wells

13.10. Incubate for exactly 15 minutes at room temperature in the dark.

13.11. Add 100 µL Stop Solution into all wells in the same order and at the same rate as for the TMB Substrate Solution.

Note: Any blue color developed during the incubation turns into yellow.

13.12. Highly positive samples can cause dark precipitates of the chromogen. These precipitates have an influence when reading the optical density. Predilution of the sample with PBS for example 1:1 is recommended. Then dilute the sample 1:100 with IgG Sample Diluent and multiply the results in Standard Units by 2 (See Section 14. Calculations.)

13.13. Measure the absorbance of the specimen at 450 nm within 30 minutes of addition of the Stop Solution.

Dual wavelength reading using 620 nm as reference wavelength is recommended.

14. CALCULATIONS

In order for an assay to be considered valid, the following criteria must be met:

- **Substrate blank:** Absorbance value **< 0.100**
- **Standard A:** Absorbance value **< 0.200**
- **Standard B:** Absorbance value **> 0.100**
- **Standard C:** Absorbance value **> 0.400**
- **Standard D:** Absorbance value **> 0.900**

Standard A < Standard B < Standard C < Standard D

If these criteria are not met, the test is not valid and must be repeated.

Calculation of Results

Calculate the mean background subtracted absorbance for each point of the standard curve and each sample. Plot the mean value of absorbance of the standards against concentration. Draw the best-fit curve through the plotted points. (e. g.: Four Parameter Logistic).

Interpolate the values of the samples on the standard curve to obtain the corresponding values of the concentrations expressed in U/mL.

Interpretation of Results

Normal value ranges for this ELISA should be established by each researcher.

The following values should be considered as a guideline only:

Reactive	> 20 U/mL
Inconclusive (Grey zone):	15 - 20 U/mL
Non reactive:	< 15 U/mL

15. TYPICAL DATA

TYPICAL STANDARD CURVE – Data provided for demonstration purposes only. A new standard curve must be generated for each assay performed.
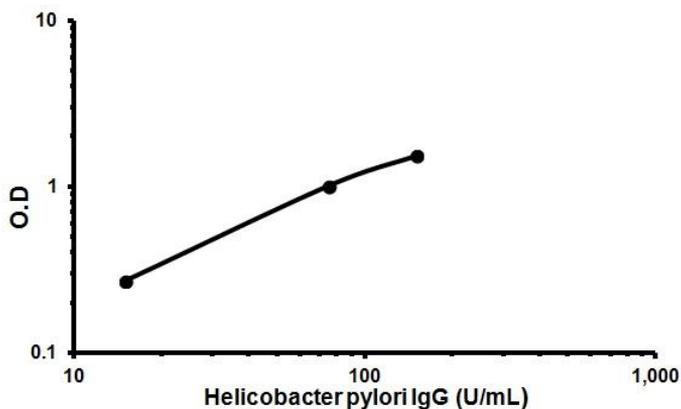
Conc. (U/mL)	O.D
0	0.004
15	0.271
75	1.011
150	1.530

16. TYPICAL SAMPLE VALUES

PRECISION –

Positive Serum	Intra-Assay		Inter-Assay	
n=	19	19	13	13
Mean	0.56	1.50	1.3	3.7
%CV (mean)	6.5		5.1	

17. ASSAY ANALYTICAL SPECS

SPECIFICITY -

The specificity is 92 % and is defined as the probability of the assay scoring negative in the absence of the specific analyte.

SENSITIVITY -

The sensitivity is 94.4 % and is defined as the probability of the assay scoring positive in the presence of the specific analyte.

The concentration of the analyte that can be distinguished from the zero calibrator – is 3 U/ml.

18. <u>INTERFERENCES</u>

Interferences with hemolytic, lipemic or icteric sera are not observed up to a concentration of 10 mg/mL hemoglobin, 5 mg/mL triglycerides and 0.2 mg/mL bilirubin.

19. <u>TROUBLESHOOTING</u>

Problem	Cause	Solution
Low signal	Incubation time to short	Try overnight incubation at 4 °C
	Precipitate can form in wells upon substrate addition when concentration of target is too high	Increase dilution factor of sample
	Using incompatible sample type (e.g. serum vs. cell extract)	Detection may be reduced or absent in untested sample types
	Sample prepared incorrectly	Ensure proper sample preparation/dilution
Large CV	Bubbles in wells	Ensure no bubbles present prior to reading plate
	All wells not washed equally/thoroughly	Check that all ports of plate washer are unobstructed/wash wells as recommended
	Incomplete reagent mixing	Ensure all reagents/master mixes are mixed thoroughly
	Inconsistent pipetting	Use calibrated pipettes & ensure accurate pipetting
	Inconsistent sample preparation or storage	Ensure consistent sample preparation and optimal sample storage conditions (e.g. minimize freeze/thaws cycles)

Problem	Cause	Solution
High background	Wells are insufficiently washed	Wash wells as per protocol recommendations
	Contaminated wash buffer	Make fresh wash buffer
	Waiting too long to read plate after adding stop solution	Read plate immediately after adding stop solution
Low sensitivity	Improper storage of ELISA kit	Store all reagents as recommended. Please note all reagents may not have identical storage requirements.
	Using incompatible sample type (e.g. Serum vs. cell extract)	Detection may be reduced or absent in untested sample types

20. <u>NOTES</u>

Technical Support

For all technical or commercial enquiries please go to:
www.abcam.com/contactus
www.abcam.cn/contactus (China)
www.abcam.co.jp/contactus (Japan)