BioCLIA Allergy Reagent Kit, K82

(Chemiluminescent Microparticle Immunoassay)

REF

MY01235 (25 Tests/kit)
MY01200 (50 Tests/kit)
MY01165 (100 Tests/kit)

INTENDED USE

BioCLIA Allergy Reagent Kit, K82 is an *in vitro* quantitative assay for the determination of specific IgE to Latex (*Hevea brasiliensis*, K82) in human serum via chemiluminescent immunoassay method on the fully automatic BioCLIA instrument. It is intended for *in vitro* diagnostic use as an aid in the clinical diagnosis of IgE mediated allergic disorders specific to Latex (K82) in conjunction with other clinical findings, and is to be used in clinical laboratories.

SUMMARY AND EXPLANATION OF THE TEST

Latex allergy is a medical term encompassing a range of allergic reactions to the proteins present in natural rubber latex. Latex allergy generally develops after repeated exposure to products containing natural rubber latex. When latex-containing medical devices or supplies come in contact with mucous membrane, the latex proteins may be absorbed through membrane. The immune system of some susceptible individuals produces antibodies that react immunologically with these antigenic proteins. As many items contain or are made from natural rubber, including shoe soles, elastic bands, rubber gloves, condoms, baby-bottle nipples and balloons, there are many possible exposure routes that may trigger a reaction. Latex sensitization in the general population varies from 5.4% to 7.6%.[1] People with latex allergies may also have or develop allergic reactions to some fruits, such as banana, kiwi, avocado and papaya. [2, 3]

Natural rubber latex is known to cause Type I and Type IV allergic reactions, as well as irritant contact dermatitis. Type I reactions account for a significant proportion of perioperative anaphylactic reaction, especially in children with myelomeningocele. [4, 5] Type IV allergy, also known as allergic contact dermatitis involves a delayed skin rash that is similar to poison ivy with blistering and oozing of the skin. Severe irritation takes place if a latex catheter is inserted in the urinary tract of a person allergic to latex. Natural rubber latex can also cause irritant contact dermatitis, a less severe form of reaction that does not involve the immune system. [6]

PRINCIPLE OF THE PROCEDURE

BioCLIA Allergy Reagent Kit is a two-step immunoassay. The allergen of interest is biotinylated, it reacts with the specific IgE in patient sample and form a IgE-allergen complex with streptavidin beads. After incubation, a washing step removes the unbound reagents and sample matrix. Subsequently add enzyme conjugated anti-human IgE antibodies and bind to the IgE-allergen complex. After incubation, a second washing step removes the excess enzyme conjugates. Then addition of substrate results in the emission of light and RLU is measured. RLU is proportional to the amount of allergen specific IgE present in the sample. To evaluate the test results, RLU is transformed to concentration with the use of a calibration curve.

WARNINGS AND PRECAUTIONS

- For professional *in vitro* diagnostic use only.
- Used on BioCLIA 6500 and BioCLIA 500 instruments only.
- Do not use reagents beyond the expiration dates.
- The kit contains human sourced materials. All recommended precautions for the handling of blood derivatives should be taken. Please refer to the OSHA Standard on Blood borne Pathogens[7] or Biosafety Level [8] or other appropriate biosafety practices. [9,10]
- Liquid waste and solid waste taken from BioCLIA 6500 and BioCLIA 500 should also be handled in accordance with the appropriate biosafety practices same as stated above.
- Once opened, the reagent cartridge must be stored in the instrument's reagent carousel. For the first placement of reagent into the instrument, please take care to avoid spilling the reagents.
- Spilled reagents should be cleaned up immediately. Comply with all federal, state and local environmental regulations when disposing of wastes.
  Improper cleaning or rinsing of the instrument may lead to chemical contamination of the reagents. Residues from common laboratory chemicals such as formalin, bleach, ethanol, or detergent can cause interference in the assay. Be sure to follow the recommended cleaning procedure as outlined in the BioCLIA 6500 and BioCLIA 500 User's Manual.

PRECAUTIONS

- The allergen contains ProClin300 0.1% as preservative and Triton X-100 0.01% as surfactant and may cause an allergic skin reaction by skin contact. Avoid contact with skin. Wear protective gloves, protective clothing and take eye protection.
- 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.

MATERIALS SUPPLIED

- **K82 Allergen** Biotinylated K82 antigen in 0.01 M PBS (pH7.4±0.2) buffer with stabilizer.

K82 | BIOT

Preservatives: 0.1% ProClin300;
Surfactant: 0.01% Triton X-100.

Kit size	Vial Quantity	Volume/Vial (mL)
25 Tests/Kit	1	0.375
50 Tests/Kit	1	0.75
100 Tests/Kit	2	0.75

ADDITIONAL MATERIALS SUPPLIED SEPARATELY

Product	CATALOGUE No.
BioCLIA Allergy Specific IgE Conjugate & Microparticle Set	MY01311 (100 Tests/Kit) MY01312 (150 Tests/Kit) MY01313 (200 Tests/Kit) MY01314 (300 Tests/Kit)
BioCLIA Allergy Specific IgE Calibrator and Control Set	MY01315
BioCLIA System Wash Buffer	MY00404
BioCLIA System Substrate	MY00405
BioCLIA 6500	MA00243
BioCLIA 500	MA00502
BioCLIA Cuvettes	MA00244 (2000 pcs/bag) MA00549 (65 pcs/box)

BioCLIA Silicone gasket (Small)	MV00195
BioCLIA Silicone gasket (Large)	MV00196

MATERIALS REQUIRED

- Distilled or deionized Water

STORAGE AND STABILITY

- Store the kit at 2-8 °C.
- The shelf life of the unopened kit is 18 months from day of production.
- Vial opened reagents or onboard reagents could be used for 28 successive days. The software of the BioCLIA instruments monitors the onboard (in-use) expiration of the reagent cartridge. The system will not allow use of a reagent which has expired.

SPECIMEN COLLECTION, STORAGE AND HANDLING

- Serum from venous can be used.
- Collect blood specimens using standard procedures.
- Test serum should be clear and non-hemolysis.
- Cloudy samples should be clarified by 3000r/min for 10 minutes before use. For samples with the presence of fibrin, ensure that complete clot formation has taken place prior to centrifugation of samples. Some samples, particularly those from patients receiving anticoagulant therapy, may require increased clotting time.
- Specimens may be refrigerated at 2-8 °C for up to seven days or stored at -20°C up to 36 months.
- Specimens may be kept onboard on BioCLIA instruments under room temperature (18-25°C) for up to 8 hours.
- Avoid repeated freezing and thawing.

ASSAY PROCEDURE

Detailed information about operating the BioCLIA instruments can be taken from the Instrument User's Manual.

Note that, it is important to perform all routine maintenance procedures for optimal performance.

Assay Calibration

The BioCLIA Allergy Reagent Kit utilizes seven points of calibrators to get the Working Calibration Curve. The calibrators information is uploaded into the instrument via the barcode provided in the BioCLIA Allergy Specific IgE Calibrator and Control Set. The Working Calibration Curve is generated and is used to calculate the analyte concentration (IU/mL) from the RLU obtained for each patient.

For each new lot of reagent, please calibrate prior to the first time use, and every 28 days thereafter. The software will not allow the lot to be used if the above requirements are not meet.

Programming and Running Samples

1. Put the reagents into the corresponding position of the reagent chamber of the fully automatic chemiluminescence analyzer. The information of the reagents can be uploaded into the instrument system through the scanning of reagent barcode, and can also be set through the supporting software of the instrument.
2. The information of calibrator / quality control is identified by scanning the calibrator / control barcodes, and the position of calibrator / quality control is assigned in the instrument system.
3. The sample to be tested is placed on the instrument sample rack chamber, and the corresponding test information is edited through the instrument supporting software.
4. Start the operation procedure, and all calibrator / quality control / sample processing steps will be automatically executed.

Control

The control procedure could be done before running the specimens every day. Users also can adjust the control procedure period according to their own lab frequency.

CALCULATION OF RESULTS

Calculation and interpretation of results will be performed automatically by software on BioCLIA instruments.

RESULT INTERPRETATION

Classification System (Scoring):

Class	Conc. (IU/mL)	Interpretation
0	0-0.34	Negative/Equivocal
1	0.35-0.69	Low
2	0.70-3.49	Moderate
3	3.50-17.49	High
4	17.50-49.99	Very High
5	50.00-99.99	Very High
6	≥ 100	Very High

The test results only reflect the amount of allergen specific IgE presented in the collected sample and should be diagnosed in conjunction with other laboratory and clinical findings.

CUT-OFF VALUE DETERMINATION

Clinical significance cut-off of allergen-specific IgE concentration has been set at 0.35 IU/mL for indication for sensitization. BioCLIA allergy reagent kits have been set using this as the cut-off to differentiate positive verses negative results.

PERFORMANCE CHARACTERISTICS

APPEARENCE

Kit components are complete with no liquid leakage, no precipitation or floc in liquid reagents. Packing labels should be clear and easy to identify.

ACCURACY / SPIKED RECOVERY

The assay is designed to have a mean recovery within 100±15% when analyzing samples spiked with known amounts of allergen specific IgE. A positive serum with high value was spiked into a sample matrix (with low allergen specific IgE concentration, around 0.35 IU/mL) at the volume ratio of 1:19 and been tested in triplicates. Recovery rate was obtained by calculating the ratio between measured concentration to theoretical concentration. *

Sample	Obs-1	Obs-2	Obs-3	Av. Obs	CV	Expected	Obs/Exp
High positive serum	84.00	92.37	96.47	90.95	6.99%		
Sample matrix	0.52	0.53	0.50	0.52	2.96%		
Spiked sample	4.67	4.78	4.64	4.70	1.57%	5.04	93.22%

*Representative data; results in individual laboratories may vary from these data.

TRACEABILITY

The IgE calibrators can be traced to WHO International Standard Immunoglobulin E (IgE), human serum (NIBSC code: 11/234).

PRECISION

A study based on guidance from (NCCLS) document EP5-A2 was performed.

Intra-assay precision: Four samples (negative, low, mid, high) were taken and tested with 10 replicates for each in a single run. Coefficient of variation (CV) was calculated for each of four samples. The results for intra-assay precision are shown in the table below.

Inter-assay precision: Four samples negative, low, mid, high) were taken and tested with 4 replicates in a single run, two runs per day for 10 days. Coefficient of variation (CV) was calculated for each of four samples. The results for inter-assay precision are shown in the table below. *

Intra-assay precision: CV ≤ 10%

Intra-Assay	negative	low	mid	high
Mean	0.27	0.66	18.10	90.04
CV	9.93%	5.13%	4.57%	3.44%

Inter-assay precision: CV ≤ 15%

Inter-Assay	negative	low	mid	high
Mean	0.26	0.64	17.68	92.31
CV	13.13%	7.30%	4.78%	4.06%

*Representative data; results in individual laboratories may vary from these data.

LIMIT OF BLANK / DETECTION (LoB/LoD)

LOB/LOD was determined according to CLSI EP17-A guideline.

The assay is designed to have LoB/LoD of ≤ 0.1 IU/mL.

LIMIT OF QUANTITATION (LoQ)

The assay is designed to have LoQ ≤ 0.35 IU/mL.

LINEARITY

The linear range of the assay is 0.1 - 100 IU/mL.

The linear range was determined by serially diluting a sample containing high levels of allergen specific IgE with a negative sample and covering the entire assay linear range according to the scheme in CLSI EP6-A. The expected value was plotted against the observed value, and linear regression analysis was performed to get slope, intercept and coefficient of correlation (r) values. The results are summarized in the table below*:

Slope	Intercept	r
0.9648	-0.7165	0.9984

*Representative data; results in individual laboratories may vary from these data.

INTERFERENCE

No interference has been observed with bilirubin, hemoglobin, triglycerides, rheumatoid factor (RF), human anti-mouse antibody (HAMA) at the level indicated below: *

- Bilirubin ≤ 20 mg/dL;
- Hemoglobin ≤ 400 mg/L;
- Triglycerides ≤ 2,000 mg/dL;
- Rheumatoid factor (RF) ≤ 1,000 IU/mL;
- Human anti-mouse antibody (HAMA) ≤ 2,000 ng/mL.

CROSS REACTIVITY

One allergen specific IgE blank sample was spiked with the IgA/IgG/IgM to a different concentration and tested with the assay. No false positive results are observed for the samples spiked with IgA/IgG/IgM at 700,7000,500μg/mL, respectively.

INHIBITION STUDY

A study based on guidance from CLSI I/LA 20-A2 was performed.

Other allergens (F24, D1, E1, W6, I6, T4, M6, T12, W1) were added to one K82 positive serum at high concentrations (≥100 times of the K82 Allergen working concentration) to see if they interference the performance of the assay. A recovery percentage for other allergens extract mixed samples should within 1±15%. The results for inhibition study are shown in the table below. *

Allergens in other categories	Spiked extract Conc. (ug/mL)	Inhibition rate
F24 extract	100	5.99%
D1 extract	100	8.96%
E1 extract	100	-1.77%
W6 extract	100	-2.78%
I6 extract	100	-1.29%
T4 extract	100	3.12%
M6 extract	100	1.31%
T12 extract	100	-3.10%
W1 extract	100	-4.91%

*Representative data; results in individual laboratories may vary from these data.

METHOD COMPARISON

Method comparison was implemented by comparing clinical sample results of the assay to the results of predicated assay. The results are shown in the table below. *

Clinical Sample	N=100	
Sensitivity	26/30	86.67%
Specificity	61/67	91.04%
Total agreement	89.69%	

*Representative data; results in individual laboratories may vary from these data.

LIMITATIONS

- The effectiveness of this kit is only confirmed for human sera, the applicability of the other kinds of samples is not verified.
- Reliable and reproducible results will be obtained when the assay procedure is carried out in accordance with the instructions and with adherence to good laboratory practice.
- Clinical diagnosis should not be made on the findings of a single test result, but should be interpreted with all clinical and laboratory findings.

SYMBOLS

REF	Catalog Number		Use-by date
IVD	In Vitro diagnostic medical device	LOT	Lot Number
+2°C +8°C	Store between +2°C and +8°C		Consult Instruction for Use
	Manufacturer	EC REP	Authorized Representative in the European Community
CE	CE Marking		Contains Sufficient for<n>Tests
	Biological Risk		GHS07 Warning
Allergen BIOT	Biotinylated allergen		

CE IVD

HOB Biotech Group Corp., Ltd.
C6 Building, No. 218 Xinghu Road, Suzhou Industrial Park,
Suzhou, Jiangsu, 215123, China

REFERENCES

1. Steven L. Kahn,Joshua O. Podjasek,Vassilios A. Dimitropoulos,Clarence W. Brown. Natural rubber latex allergy[J]. Disease-a-Month,2016;62(1):
2. Grzybowski M, Ownby DR, Peyser PA, Johnson CC, Schork MA. The prevalence of anti-latex IgE antibodies among registered nurses. Journal of Allergy & Clinical Immunology 1996;98;535-44.
3. Slater JE, Mostello LA, Shaer C. Rubber-specific IgE in children with spina bifida. Journal of Urology 1991;146;578-9.
4. Rendeli C, Nucera E, Ausili E, Tabacco F, Roncallo C, Pollastrini E, et al. Latex sensitisation and allergy in children with myelomeningocele. Child's Nervous System 2006;22:28-32.
5. Banta JV, Bonanni C, Prebluda J. Latex anaphylaxis during spinal surgery in children with myelomeningocele. Developmental Medicine & Child Neurology 1993;35:543-8.
6. Reddy S. Latex allergy. American Family Physician 1998;57:93-102.
7. US Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1910.1030, Bloodborne Pathogens.
8. US Department of Health and Human Services. Biosafety in Microbiological and Biomedical Laboratories, 6 Edition. Washington, DC: US Government Printing Office, 2020.
9. World Health Organization. Laboratory Biosafety Manual Fourth Edition. Geneva: World Health Organization; 2020.
10. Clinical and Laboratory Standards Institute. Protection of Laboratory Workers from Occupationally Acquired Infections: Approved Guideline - Fourth Edition. CLSI Document M29-A4. Wayne, PA: Clinical and Laboratory Standards Institute, 2014.

CONTACT INFORMATION:

TEL (+86)512-69561996
Fax (+86)512-62956652
WEBSITE: www.hob-biotech.com
CUSTOMER SERVICE: TEL (+86)4008601202

EC REP

EUROPE REPRESENTATIVE: Emergo Europe
ADDRESS/LOCATION:
Prinsessegracht 20, 2514 AP The Hague, The Netherlands

The eIFU is available on Website:
http://en.hob-biotech.com/usercenter/login.aspx

TECHNICAL ASSISTANCE

For technical assistance, contact your National Distributor.

Date of issue: 11th Feb. 2022
Change Control Number: CN20095E
Version: A/0 (EN)