CE IVD

skyla Hi CRP Reagent Kit

Product Code：801-120

For Professional Use Only **Rev：C**

========== **Be sure to read and follow the instructions before use** ==========

1. Intended Use

The skyla Hi CRP reagent kit is an immunoassay used with skyla Hi Analyzer provides quantitative measurement of C-Reactive Protein (CRP) concentration in human serum, plasma, and whole blood. The test result provides information for the evaluation of infection, tissue injury, inflammatory disorders, and associated diseases.

Precaution/Waring

1. This product is for in vitro diagnostic use only
2. The product must not be used individually for diagnostic purpose.
3. The Reagent kit should be stored at 2-8 °C (35.6-46.4 °F).
4. Please wear the gloves when performing the test.
5. Do not re-use any part of the reagent kit.
6. Dispose all waste in accordance with applicable national and/or local regulations.

2. Overview and Description

CRP is one of the cytokine-induced acute-phase proteins. The level of CRP in the blood normally below 5 mg/L in healthy person, and above 10 mg/L is typically considered to be clinically significant. This threshold is often exceeded within four to

eight hours after an acute inflammatory event, with CRP values reaching approximately 20 to 500 mg/L.

Additionally, NIEC guideline also recommends the use of CRP results to guide antibiotic prescribing in people[1]. Immediate antibiotic treatment should be offered if the CRP level is more than 100 mg/L and a delayed prescription should be considered at levels between 20 and 100 mg/L. Antibiotics are not recommended for CRP levels less than 20 mg/L.

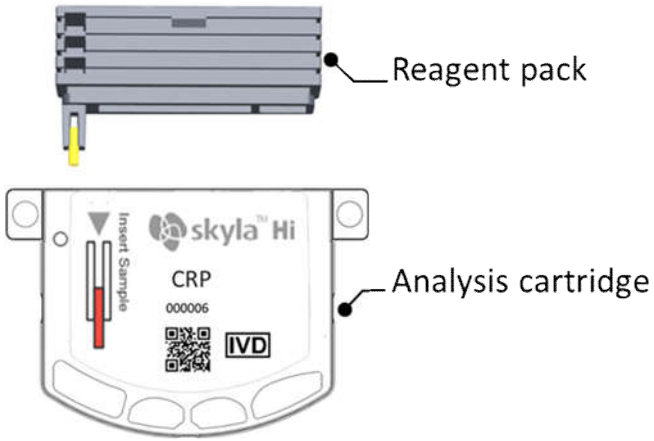
3. Principle of Detection

The methodology of “latex agglutination” was used for the detection of CRP in this product. Anti-human CRP antibody bounded latex sphere in the reagent could recognize the CRP of sample to induce an aggregate which causes increased turbidity in the solution. The degree of turbidity of solution can be determined through the measurement of 650 nm absorbance, and is proportional to the concentration of CRP in the sample.

CRP + Goat anti-human C-reactive protein antibody coated Latex
———＞Agglutination due to antigen-antibody reaction

4. Test Components

The skyla Hi CRP reagent kit consists of analysis cartridge and reagent pack (the reagent pack includes of capillary tube for specimen collection).



Major ingredients:

Composition	Quantity / Kit
Tris buffer	4 mM
Latex sensitized with anti-human CRP antibody (Goat polyclonal antibody)	Adequate dose

5. Storage and shelf life

- Please store the kit at 2~8°C in the refrigerator.
- The product under normal storage can be kept for up to one year. The expiry date of the reagent is printed on the outside of the sealed pouch of reagent kit.
- The test kit can be stored in unopened pouch at room temperature (10-25°C) for 4 weeks.

NOTE

Avoid exposure the kit to direct sunlight.

6. Specimen Collection and Preparation

Sample type:

The following sample materials can be used with the skyla Hi CRP reagent kit:

- Serum
- Lithium heparinized Plasma
- Capillary blood
- WB with anticoagulant (Lithium heparin or EDTA)
- CRP control solution

Sample requirement:

Sample volume: 5 μ L

Sample preparation:

- Collection, preservation and handling of specimens in accordance with local legal requirements or the standard operating procedures of your organization.
- Do not use specimens containing other anti-coagulants. That would cause in incorrect test results.
- The sample should be collected with capillary tube on the reagent pack.

NOTE

1. Make sure that capillary is completely filled with sample.
2. Once the reagent pack is filled with the blood sample, analysis must begin within

five minutes.

7. Testing Procedures

Material Preparation:

skyla Hi CRP Reagent kit

Required materials not included in the kit:

skyla Hi Analyzer

Quality control solution

Test Conditions:

Test should be carrying out in an environment with temperatures of 10°C~32°C (50.0-89.6 °F). Each test will take about 6 minutes. During the test, chamber in the analyzer keeps the temperature at 37°C for stable assay.

Testing Steps:

1. Open the aluminum pouch and remove the analysis cartridge and reagent pack.
2. Use the reagent pack to collect samples.

NOTE

- Make sure that capillary is completely filled with sample as shown in figure (a) adequate. If the capillary is not completely filled with sample as shown in figure (b). Please repeat the collect samples procedure.
- If the glass capillary exterior has excess blood buildup, use non-ciliated tissues to wipe away the excess blood outside the glass capillary.

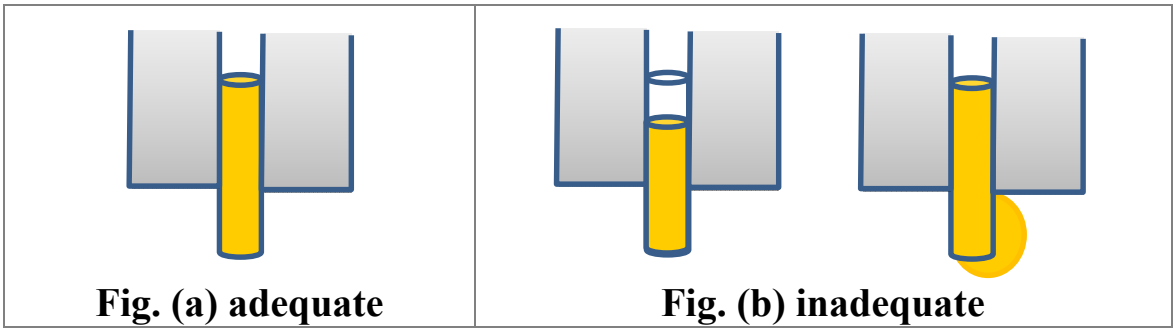


Fig. (a) adequate **Fig. (b) inadequate**

3. Insert the reagent pack in the analysis cartridge.
4. Affix the test cartridge into the analysis carrier.
5. Press the start button on the screen and place the carrier on the transmission tray of **skyla Hi Analyzer**. And then press "OK" button on the screen to initiate analysis.

Please refer to "skyla Hi Analyzer Operator's Manual" for addition information.

NOTE

1. Testing should be performed within **20 minutes** after the pouch is opened.
2. Be careful not to touch the optical window and bar-code on the analysis cartridge when performing the test.

8. Calibration

The analyzer automatically reads in the lot-specific calibration data from the barcode information printed on the analysis cartridge, eliminating the need for calibration by the user.

9. Quality Control

It's recommended to do the quality control testing routinely to ensure the reliability of measurement result. Please consult technical support of skyla for the control solution selection that suitable for skyla Hi CRP reagent kit.

The quality control testing with external control material is performed by following the regular testing steps shown above. The frequency and criteria of QC testing should be adapted to each site's individual requirements. The below shows the recommend timing of QC test that could be followed.

- At least every 30 days.
- Before a new batch of reagents is used for testing.
- When the analyzer is moved or the operating environment significantly changes.
- When an unexpected test results was obtained.

10. Result Reporting

The test result will be automatically calculated and displayed in concentration. The test report also cloud be printed out with optional skyla thermo-printer. Please refer to "skyla Hi Analyzer Operator's Manual" for the operation details.

Measurement range:

Test Item	Dynamic Range	Dynamic Range (SI)
CRP	5.0 – 200 mg/L	5.0 – 200 mg/L

11. Expected value[2]

<10 mg/L (according to Tietz Clinical Guide to Laboratory Tests, 4th edition)

12. Limitations/Interferences

Hemoglobin and Hematocrit:

The adapted concentration range of total hemoglobin of specimens is 7 to 20 g/dL (Hematocrit 20~60%). The test result may be affected if patient's hemoglobin value is outside the range.

Endogenous Interference:

Physiological interferents in blood include hemolysis, icterus, and lipemia. For every test item, 2 Levels human serum pool supplemented with known concentrations of the endogenous substances were used for the testing. Significant interference is defined as a >10% shift in the test result.

Test Item	substance concentration with interferences of less than 10%		
	Hemoglobin	Bilirubin	Triglycerides
CRP	600 mg/dL	30 mg/dL	700 mg/dL

Exogenous Interference:

Ten exogenous substances were selected as potential interferents for the study. For every test item, human serum pool supplemented with a known concentration of the substances was used for the testing. Significant interference is defined as a >10% shift in the test result.

Substance	Test Concentration	Effect
Acetaminophen	20 mg/dL	No significant interference
Acetylsalicylic acid	65 mg/dL	No significant interference
Ampicillin	5 mg/dL	No significant interference
Ascorbic acid	6 mg/dL	No significant interference
Caffenine	6 mg/dL	No significant interference
Cephalothin	30 mg/dL	No significant interference

Substance	Test Concentration	Effect
Cimetidine	2 mg/dL	No significant interference
Ibuprofen	50 mg/dL	No significant interference
Salicylic acid	60 mg/dL	No significant interference
Theophylline	4 mg/dL	No significant interference

13. Performance Characteristics

Linearity:

The linearity of skyla CRP reagent kit was evaluated by following the CLIS EP6 protocol. The assay is linear between 5.0 and 200 mg/L.

Analytical Sensitivity:

The sensitivity (limits of quantitation) was determined according to the lowest concentration of the dynamic range which had an acceptable CV (CV<20%). The sensitivity of skyla CRP reagent kit is shown in the table below.

Test Item	Sensitivity
CRP	5.0 mg/L

Precision:

The precision of assay was evaluated with 3 levels of control solution and 2 levels of patient's specimen by following the CLSI EP5 protocol. Tests are performed duplicates per run, 2 runs per day for a total of 20 days. Result for repeatability and reproducibility are shown in the table below.

Test Item	Sample	Mean	Within-Run		Total	
			SD	%CV	SD	%CV
CRP	Control L	17 mg/L	0.46	**2.7**	1.70	**10.0**
	Control M	45 mg/L	0.65	**1.4**	2.26	**5.0**
	Control H	154 mg/L	6.23	**4.0**	6.61	**4.3**
	Patient L1	9.2 mg/L	0.72	**7.8**	0.77	**8.4**
	Patient L2	93 mg/L	4.7	**5.1**	4.7	**5.1**

Method comparison:

The Siemens ADVIA 1800 was used as comparative method in the study. The tests are performed by using the same clinical serum sample for two methods. Correlation between two methods can be determined through statistical analysis.

Test Item	Correlation Coefficient (R)	Slope	Intercept	SEE	N	Sample range
CRP	0.9972	0.985	0.554	4.494	50	4.6 mg/L – 203.3 mg/L

Matrix Comparison:

The Correlation between WB, plasma and serum was determined. The clinical sample was used in the study.

Test Item	N	Matrix type	Correlation Coefficient (R)	Slope	Intercept
CRP	7	Serum vs. Plasma	0.9952	0.99	-0.13
		Plasma vs. WB	0.9939	1.149	-5.05
		WB vs. Serum	0.9939	0.879	4.57

14. Reference

1. Evaluating a point-of-care C-reactive protein test to support antibiotic prescribing decisions in a general practice. Clinical Pharmacist 12 OCT 2016.
2. Tietz Clinical Guide to Laboratory Tests, 4th edition. Elsevier 2006, 190-191.
3. Clinical and Laboratory Standards Institute. Interference Testing in Clinical Chemistry; Approved Guideline - Second Edition. CLSI document EP07-A2. Robert J. McEnroe: 2005.
4. Clinical and Laboratory Standards Institute. Evaluation of the Linearity of Quantitative Measurement Procedures: A Statistical Approach; Approved Guideline. NCCLS document EP06-A. Dan Tholen: 2003.
5. Clinical and Laboratory Standards Institute. Protocols for Determination of Limits of Detection and Limits of Quantitation; Approved Guideline. NCCLS document EP17-A. Daniel W. Tholen: 2004.
6. Clinical and Laboratory Standards Institute. Evaluation of Precision Performance of Quantitative Measurement Methods; Approved Guideline - Second Edition. NCCLS document EP05-A2. Jan S. Krouwer: 2004.
7. Clinical and Laboratory Standards Institute. Method Comparison and Bias Estimation Using Patient Samples; Approved Guideline - Second Edition. NCCLS document EP09-A2. Jan S. Krouwer: 2002.

Symbol Index			
REF	Catalogue number		Consult instruction for use
LOT	Batch code		Use by
	Manufacturer	EC REP	Authorized representative in the European Community
IVD	In Vitro diagnostic medical device	CE	CE mark
	Temperature limitation		Caution
	Do not reuse		

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