Reagent for research purpose use only

Nanopia® KL-6 Reagent

INTENDED USE

For the quantitative measurement of sialylated carbohydrate antigen (KL-6) concentration in serum or plasma.

SUMMARY

KL-6 is a sialylated carbohydrate antigen that was detected by Kohno et al. in 1985. It is a high molecular weight glycoprotein that is expressed by type II alveolar epithelial cells and is a mucin which belongs to MUC-1 in cluster 9.[1,2] It has been confirmed that the serum KL-6 level is significantly higher in patients with interstitial pneumonia than in healthy volunteers or patients with other respiratory diseases, and it has been shown by ROC analysis that serum KL-6 is a diagnostically useful indicator.[3] In addition, because serum KL-6 levels are significantly higher in patients with active interstitial pneumonia than in patients with inactive pneumonia, serum KL-6 is considered to be useful for assessing disease activity. Furthermore, it has been noted that this parameter changes according to the pathology of interstitial pneumonia during follow-up.[3]

PRINCIPLE

Sialylated carbohydrate antigen KL-6(KL-6) in samples agglutinates with mouse KL-6 monoclonal antibody coated latex through the antigen-antibody reaction. The change in absorbance caused by this agglutination is measured to determine the KL-6 level.

REAGENTS

Composition

Component	Ingredients
Reagent 1	Buffer
Reagent 2	Buffer Mouse anti-human KL-6 monoclonal antibodycoated latex

Precautions and Warnings

DANGER

H317 May cause an allergic skin reaction.
H350 May cause cancer.
H361 Suspected of damaging fertility or the unborn child.
H373 May cause damage to organs (liver) through prolonged or repeated exposure.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves.
P281 Use personal protective equipment as required.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P308+P313 IF exposed or concerned: Get medical advice/ attention.
P314 Get Medical advice/attention if you feel unwell.
P405 Store locked up.
P501 Dispose of contents/container according to relevant local and national regulations.

1. Do not use the reagents beyond the expiration date printed on the label.
2. **Warning** : All specimens used in the test should be considered potentially infectious. Universal precautions as they apply to your facility should be used for handling and disposal of materials during and after testing.[4]
3. Nanopia® KL-6 Reagents must be used with the Nanopia® KL-6 Calibrator.
4. **Caution** : Avoid freezing reagents.
5. **Caution** : Do not store below 2ºC.
6. Disposal of all waste material should be in accordance with local guidelines.
7. Do not replenish reagents.
8. After completion of measurement, tightly close the container and store in a refrigerator.
9. Avoid mixing reagents from different lots.
10. Avoid exposing reagents to direct sunlight.
11. Be sure to perform calibration when either the lot of Reagent 1 or that of Reagent 2 is changed.

Preparation

Reagent 1: Liquid, ready-to-use
Reagent 2: Liquid, ready-to-use
Invert to mix before use. Avoid the formation of foam.

Storage and Stability

Unopened reagent is stable until the expiration date shown on the label when stored at 2-8°C.
Once opened, the reagent is stable for 4 weeks at 2-8°C.
DO NOT FREEZE.

Indications of Deterioration

Presence of color change or microbial growth may indicate deterioration.
Inability to recover control values.

SPECIMEN COLLECTION AND PREPARATION

Serum or plasma is the recommended samples.
Use standard sample collection and preparation methods.[5]

If not analyzed promptly, serum or plasma specimens may be stored at 2 - 8ºC for 1 week. If specimens need to be stored for more than 1 week, they may be preserved at -80° C or below for up to 4 weeks.[6]

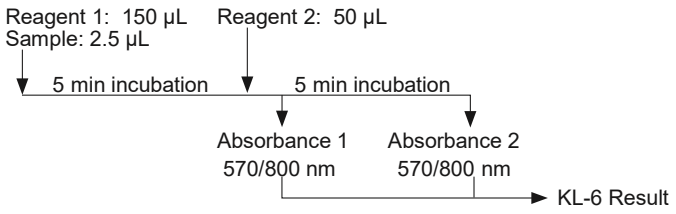
Allow samples to rise to room temperature (15-30°C) before measurement.

Samples may be frozen and thawed once.

PROCEDURE

Assay

Below is a general example of the Nanopia® KL-6 assay procedure for an automated analyzer. All analyzer applications should be validated.



For technical assistance please contact Sekisui Diagnostics GmbH at +49-6157-990899 or info@amdiag.de.

Materials Provided

Nanopia® KL-6 Reagents 1 and 2 are required for the measurement of KL-6. The Nanopia® KL-6 reagents are packaged and sold separately. The following items may be included in the package you receive.

Description	Configuration	Catalog Number
Nanopia® KL-6 Reagent 1	2 x 24 mL	466175
Nanopia® KL-6 Reagent 2	2 x 8 mL	466199

Materials Required but not Provided

Description	Configuration	Catalog Number
Nanopia® KL-6 Calibrator	4 Levels x 1.0 mL	536519
Nanopia® E Control (Level 1, 2)	Level 1 - 3 x 1 mL Level 2 - 3 x 1 mL	516214

• Analyzer capable of running two-reagent chemistries.

Calibration

Only the Nanopia® KL-6 Calibrator should be used to calibrate the Nanopia® KL-6 assay. The assigned values of the KL-6 Calibrators are traceable to an in-house standard.

Refer to the instrument operator's manual for analyzer specific calibration procedures and for guidance in determining calibration frequency.

Quality Control values should be within the expected ranges.

Quality Control

Reliability of test results should be monitored routinely with quality control materials or serum pools that reasonably represent performance with patient specimens. Controls or serum pools should be used to monitor that the reagents are functioning properly and that correct procedures are being followed. An acceptable range for each lot of control material should be established by the laboratory. If control values are not within the expected range, follow normal troubleshooting procedures.

Quality control requirements should be established in accordance with local, state and/or federal regulations, or accreditation requirements.

RESULTS

Limitations/Interfering Substances

Criterion: Recovery within ± 10% of initial value

Intralipos concentration of up to 5% did not interfere in samples with KL-6 concentrations of 437 and 930 U/mL.

Hemoglobin concentration of up to 500 mg/dL did not interfere in samples with KL-6 concentrations of 393 and 843 U/mL.

Conjugated Bilirubin concentration of up to 20 mg/dL did not interfere in samples with KL-6 concentrations of 397 and 838 U/mL.

Unconjugated Bilirubin concentration of up to 20 mg/dL did not interfere in samples with KL-6 concentrations of 394 and 842 U/mL.

Formazin turbidity of up to 2000 units did not interfere in samples with KL-6 concentrations of 392 and 845 U/mL.

Rheumatoid factor concentration of up to 500 IU/mL did not interfere in samples with KL-6 concentrations of 432 and 924 U/mL.

Reactions with non-target substances or interfering reactions may be encountered. If measurement values or results appear unreliable, repeat the measurement after dilution, if necessary; or use another analytical method.

KL-6 levels may be increased in patients with pulmonary tuberculosis and extensive lesions or patients with malignant tumors, such as lung, breast, and pancreatic cancer. Carefully assess the measurements obtained in such patients.

Expected Values

The values provided are those based on a Japanese population sample set.

1. Normal range for reference[3]
   105.3 - 401.2 U/mL
2. Cut-off value[3]
   500 U/mL

Each laboratory should confirm the reference interval for the patient population it serves.

SPECIFIC PERFORMANCE CHARACTERISTICS

Method Comparison

Comparative performance studies were conducted using the KL-6 Reagent on the Roche/Hitachi 917 clinical analyzer and Eitest KL-6 and Picolumi KL-6, in vitro diagnostics that had been approved in Japan.

For Eitest KL-6 (ELISA):

n=109	
Slope	0.99
Intercept (U/mL)	–5.9
Correlation Coefficient (r)	0.981

For Picolumi KL-6 (Chemiluminescent assay):

n=109	
Slope	0.96
Intercept (U/mL)	7.1
Correlation Coefficient (r)	0.986

Comparative performance between serum and plasma

Comparative performance studies were conducted using the KL-6 Reagent on the Roche/Hitachi 917 clinical analyzer

n=70	
Slope	0.96
Intercept (U/mL)	–6.2
Correlation Coefficient (r)	0.999

Sensitivity

1. Reagent blank: Absorbance is 10 mAbs or lower.
2. Sensitivity of the KL-6 assay: Absorbance of KL-6 per 100 U/mL ranges from 2.3 to 11.5 mAbs.

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Accuracy
85-115% to the assigned values

Precision
CV=10% or lower (n=10)

Within run reproducibility using three reagent lots and three samples (n=10)

Reagent Lot	Sample	Mean (U/mL)	CV (%)
007	A	355	0.5
	B	822	0.7
	C	2043	0.4
008	A	363	1.1
	B	839	0.4
	C	2088	0.4
009	A	373	1.4
	B	852	0.8
	C	2130	0.5

Linearity
Using a Roche/Hitachi 917 automated analyzer the KL-6 method is linear from 50-5000 U/mL.
If the concentration of KL-6 in a sample exceeds the range of measurement, dilute the sample with physiological saline, and repeat the measurement. Multiply the result by the dilution to obtain the KL-6 concentration in the sample.

References

1. Kohno N. Med J Hiroshima Univ, 33, 971: 1985.
2. Kohno N. Respiration, 16, 391: 1997.
3. Kohno N. et al. Japan J Clin Exper Med, 75, 217: 1998.
4. Wilson DE and Chosewood LC, eds. Biosafety in Microbiological and Biomedical Laboratories. (5th Edition), U.S. Dept. of Health and Human Services, Public Health Service, HHS Publication No. (CDC) 21-1112, Washington, DC: 2009.
5. Clinical and Laboratory Standards Institute. Procedures for the Handling and Processing of Blood Specimens for Common Laboratory Tests: Approved Guideline. CLSI Document GP44-A4, Wayne, PA: 2010.
6. Nishimiya, et al. Japanese Journal of Medicine and Pharmaceutical Science Vol.44 No.4 2000.
7. Data on file at Sekisui Medical.

Definitions for Symbols

REF
Catalog number

Temperature limitation

Manufacturer

Use by

LOT
Batch code

Consult Instructions for use

Caution, consult accompanying documents

EC REP
Authorized representative in the European Community

CONT
Contents

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