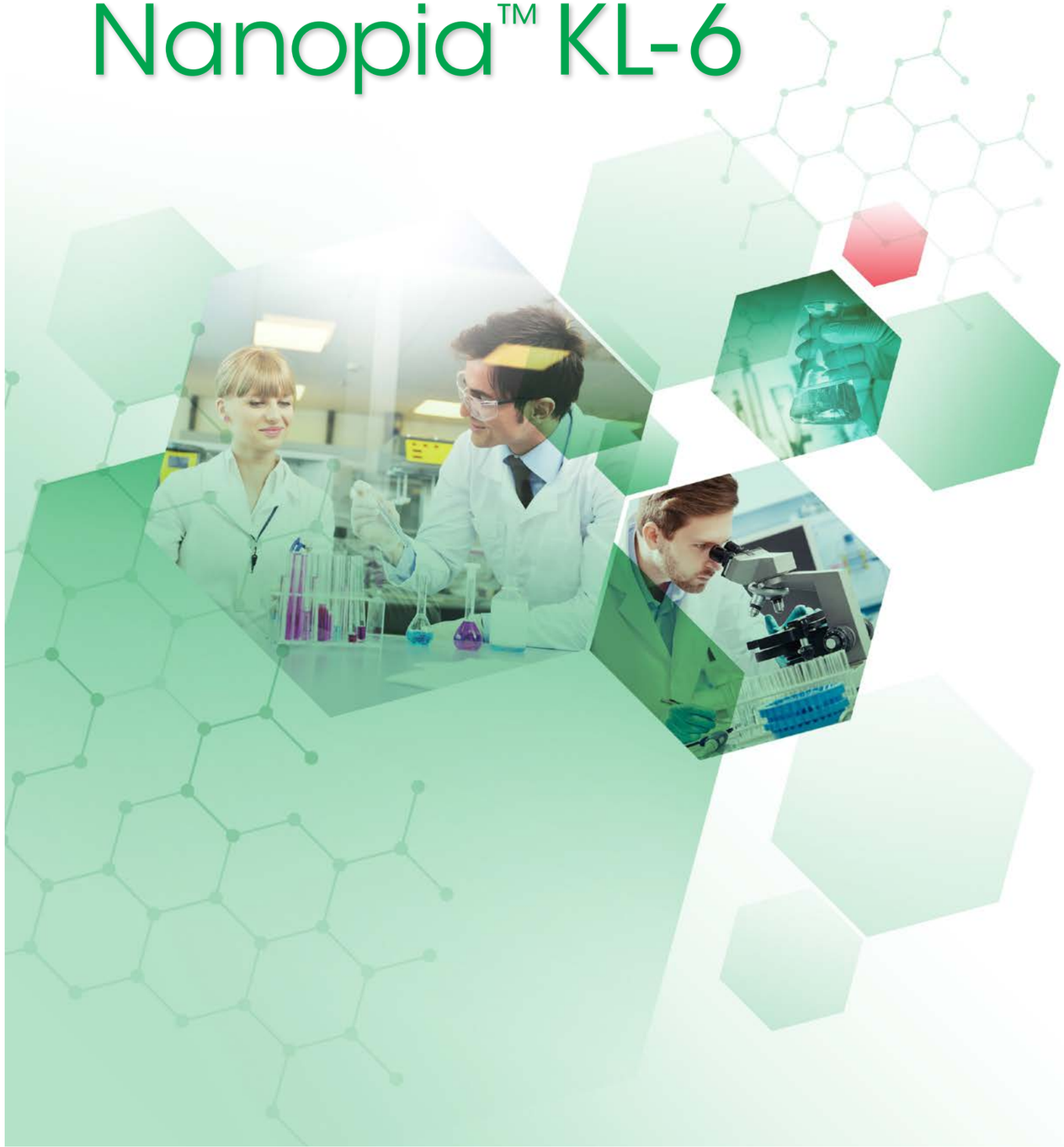
Sialylated carbohydrate antigen KL-6 kit

Nanopia™ KL-6



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KL-101
1707 JBA500

Sialylated carbohydrate antigen KL-6 kit

Nanopia™ KL-6

1. Purpose of use

For measuring KL-6 in serum or plasma
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 cluster9. [1] [2]
It has been confirmed that the serum KL-6 level is significantly higher in patients with interstitial pneumonia than in healthy voluteers or patients with other respiratory diseases, and it has been shown by ROC analysis that serum KL-6 is a useful diagnostic indicator. [3]
In addition, serum KL-6 is considered to be useful for assessing disease activity, because serum KL-6 levels are significantly higher in patients with active interstitial pneumonia than in patients with inactive pneumonia.
Furthermore, it has been noted that the parameter will change depending on the pathology of interstitial pneumonia during follow-up. [3]

2. Features

1. Suitable for use on most analyzers
2. Ready-to-use reagent.
3. No need to pretreat sample.
4. Results available in 10 minutes

3. Components and Ingredients

- KL-6 buffer reagent 1
- KL-6 latex reagent 2
  Anti-humanKL-6 mouse monoclonal antibody coated latex

4. Measurement principle (Latex-enhanced immunoturbidimetric assay)

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

KL-6 + anti-humanKL-6 mouse monoclonal antibody coated latex
→ agglutination by antigen-antibody complex reaction

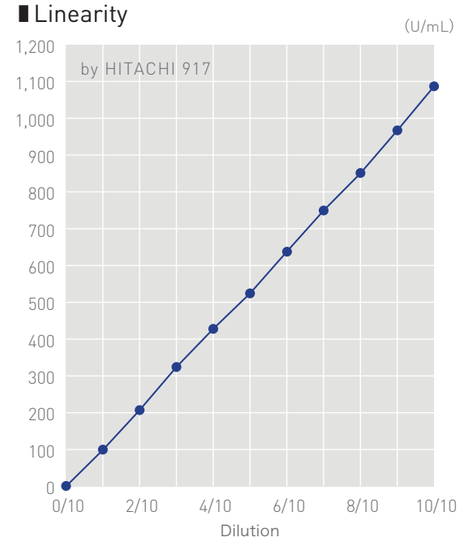
1) Kohno N. Med J, Hiroshima Univ, 33, 971:1985.
2) Kohno N. Respiration, 16,391:1997
3) Kohno N.,et al. Japan J Clin Exper Med, 75, 217:1998

5. Data

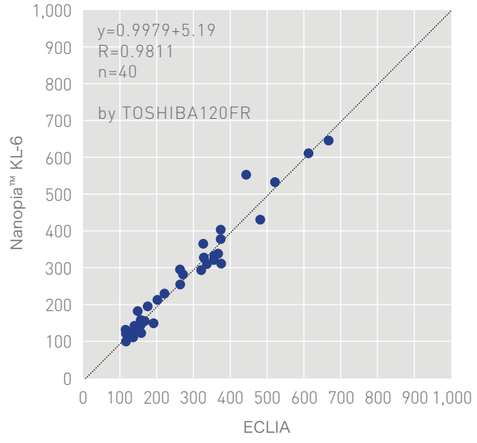
■ Within-run reproducibility (U/mL)

	Sample1	Sample2	Sample3
n	30	30	30
Mean	427.0	1041.4	351.6
S.D.	5.68	6.91	6.31
C.V. (%)	1.33	0.66	1.80
Max.	440	1057	365
Min.	416	1027	339
Range	24	30	26

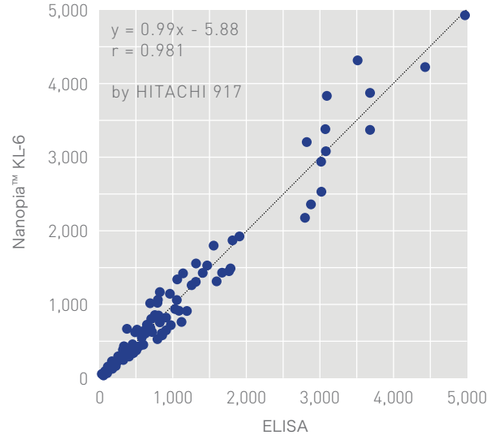
■ Linearity



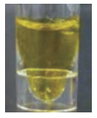
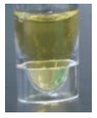
■ Correlation with ECLIA



■ Correlation with ELISA



■ Interference (U/mL)

		F-BIL	C-BIL	Hb	Chyle	Ascorbic acid	Rheumatoid factor
addition concentration		20 mg/dL	20 mg/dL	500 mg/dL	2500 formazin turbidity	50 mg/dL	500 U/mL
measurement value	Base plasma	311.1	319.7	312.7	303.3	311.4	297.5
							
	Including interfering substance	319.7	309.4	289.3	312.3	311.0	303.8
							

1. History of Development

- 1985 Kohno et al. produced an anti KL-6 monoclonal antibody. [1)]
- 1989 KL-6 was reported to be a useful marker for disease activity by providing high positive rates for interstitial pneumonia. [2)]
- 1993 KL-6 was classfied as an antibody that recognizes MUC1 in the 3rd international workshop on lung cancer and lung cell cluster classification. [3)]
- 1996 14 Japanese medical institutions re-confirmed the 1989 publication regarding the usefulness of KL-6 in Interstitial Lung Diseases. [4)]
- 1999 Eitest KL-6(ELISA) was launched in Japan.
- 2009 Nanopia KL-6 was launched in Japan.

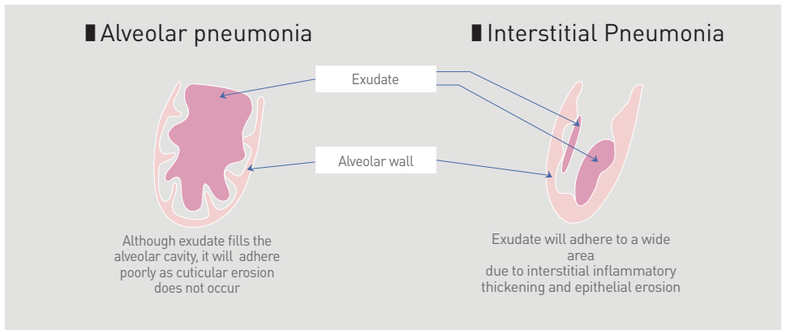
1) Kohno N. Medical Journal of Hiroshima University, 33(6):971-1985
2) Kohno et al.: Chest,96(1),1989
3) Stahel A.R et al.: Int.J.Cancer Suppl.,1(8),1994
4) Kitamura et al.: Journal of the Japanese Respiratory Society, 34(6),1996

2. Alveolar pneumonia and Interstitial Pneumonia (IP)

"Pneumonia" is a general term that refers to inflammation that occurs in the structures responsible for gas exchange at the bronchiole level and smaller.

- **Pneumonia(Alveolar Pneumonia)**
  Inflammation occurs primarily inside the alveolar cavity
  Alveolar structure is largely unaffected
- **Pneumonitis (Interstitial Pneumonia)**
  Inflammation occurs primarily in the alveolar wall (including epithelium)
  The alveoli thickens, due to fibrosis of alveolar fluid

Diagnosis of these diseases is important as their treatments differ completely



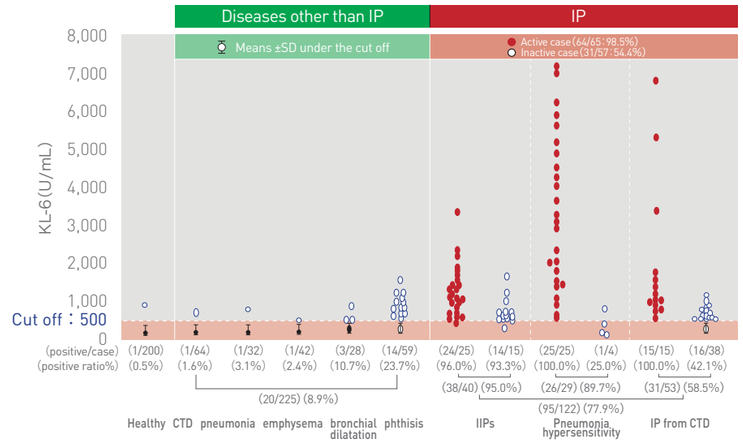
Kawabata et al, Medicina 34(10), 1951, (1997)

3. Specificity of KL-6 in IP patients

Cohorts

Healthy(N=200), Diseases other than IP (N=225), and IP (N=122)

Nobuoki KOHNO et al:cRinsho to Kenkyu, 75:217(1998)

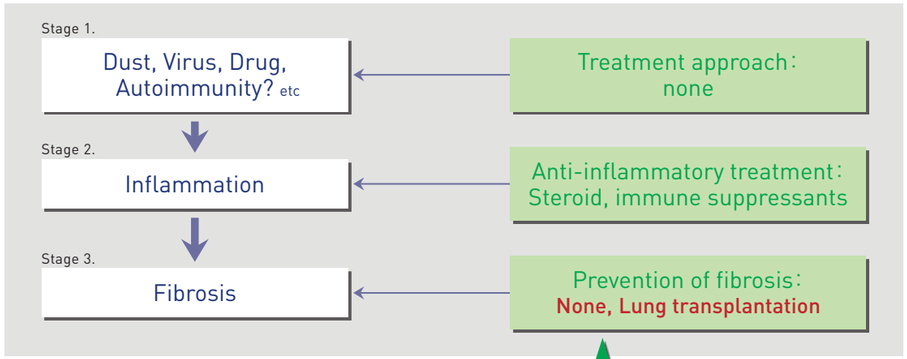


KL-6 is specific to patients with interstitial pneumonia

IIPs:Idiopathic Interstitial Pneumonias
CTD:Connective Tissue Disease
※Active/Inactive were judged by clinical sign

4. Treatment of IP at various stages

- IP is divided in a number of stage of fibrosis.
  1) Irritation caused by some reason
  2) Continuous inflammation
  3) Fibrosis
- Steroids or immune suppressants are used for treatment.

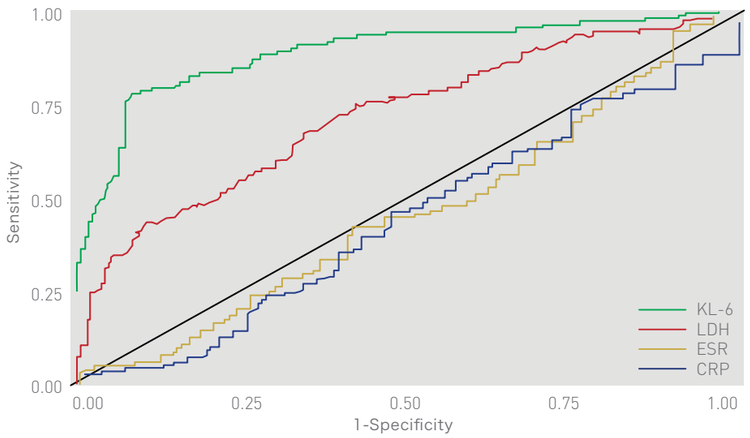


There are no treatments if IP develops to Fibrosis.
Therefore, early diagnosis of IP is important.

5. Comparison of KL-6 with other markers

Cases IP (N=122), Diseases other than IP (N=225)

method Comparison of KL-6 and LDH, erythrocyte sedimentation rate (ESR) and CRP on a ROC



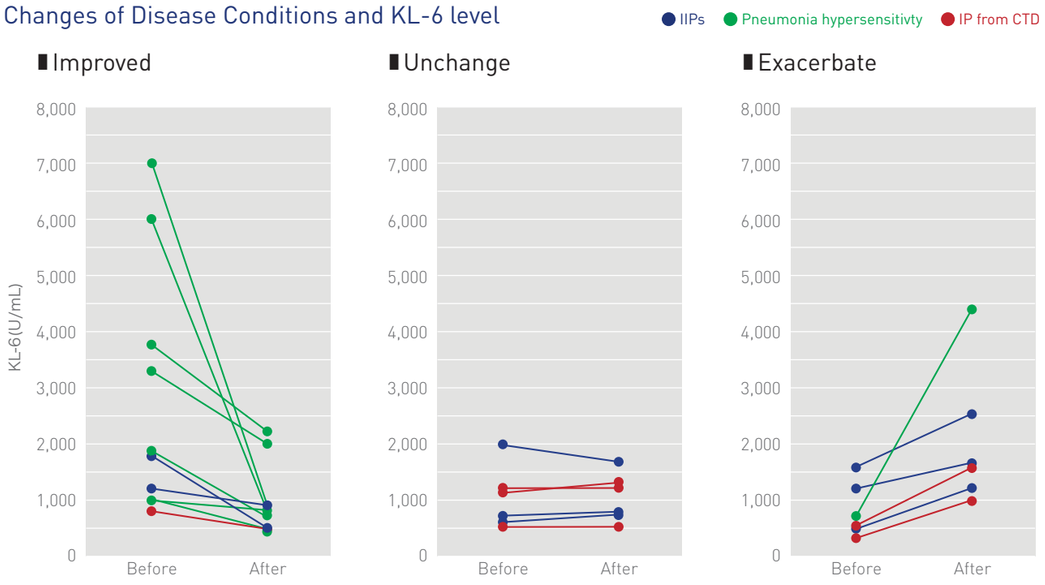
KL-6 is the most useful compared to the other markers

Nobuoki KOHNO et al : cRinsho to Kenkyu, 75 : 217(1998)

6. Changes of Disease Conditions and KL-6 level

Cases Improved(N=10) Unchange (N=6) Exacerbate (N=6)

Changes of Disease Conditions and KL-6 level



IIPs:Idiopathic Interstitial Pneumonias
CTD:Connective Tissue Disease

Nobuoki KOHNO et al : Rinsyo to Kenkyu, 75 : 217(1998)

7. Drug-induced Interstitial Pneumonia

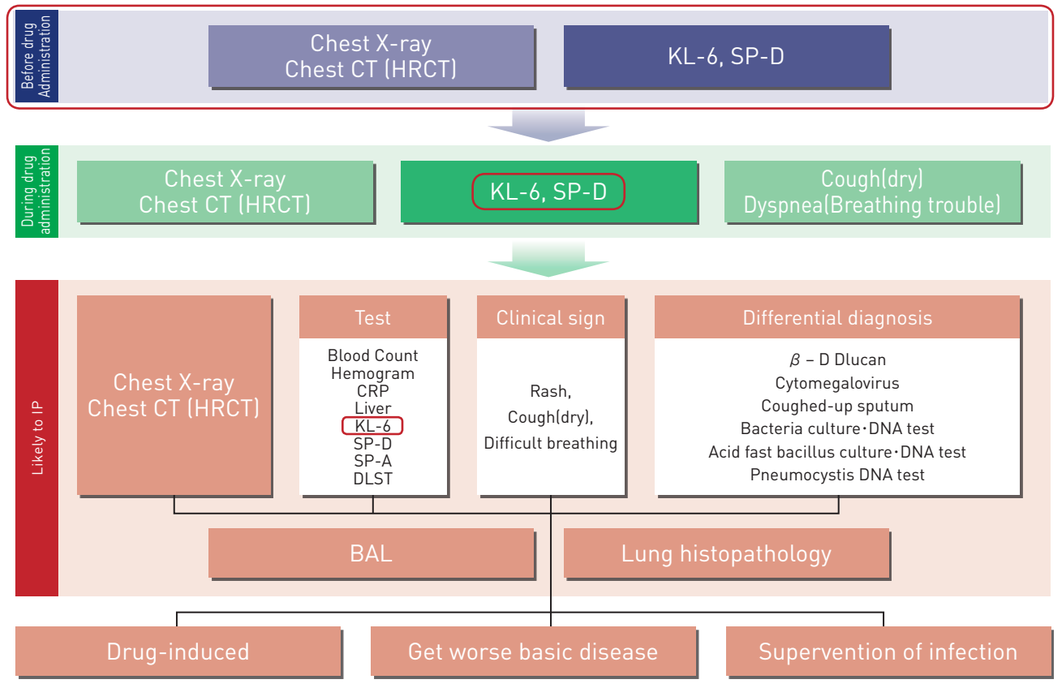
Japanese are more likely to develop IP than Europeans.

●Gefitinib (Iressa)	5.8% (20times)
●Leflunomide (Arava)	1.8% (80times)
●Bleomycin (Bleo)	10.2% (60times)
●Irinotecan (Campto)	1.3%
●Interferon	0.1%
●Etanercept (n=13,894)	0.6%

※Based on IFU of each drugs

Tacrolimus induces Interstitial Pneumonia as a side effect rheumatoid patients. There are no side effects when used as a immunosuppressor for trasplant recipients even if the blood concentration level is 3-fold.

8. Diagnosis flow chart for Drug-induced Interstitial Pneumonia



The Japan Respiratory society drug-induced pneumonia guide line committee 34 (2006)