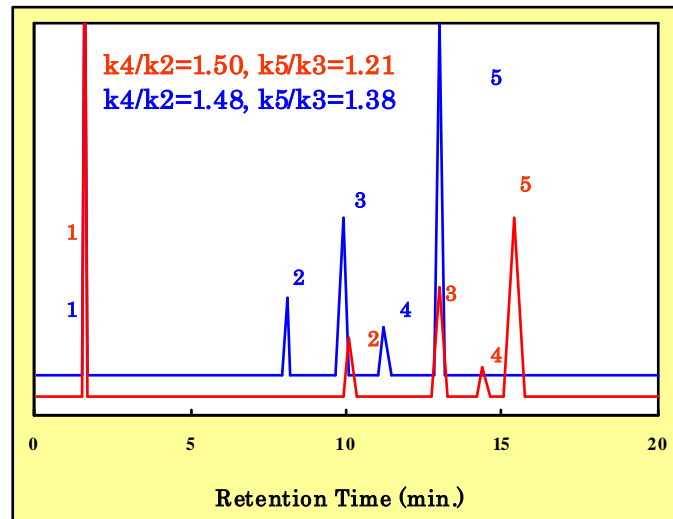


# HiQ sil C18HS: Superior Retention

## Hydrophobic compounds (Aromatic Hydrocarbons)

1. Uracil
2. n-Butylbenzene
3. o-Terphenyl
4. n-Amylbenzene
5. Triphenylene]

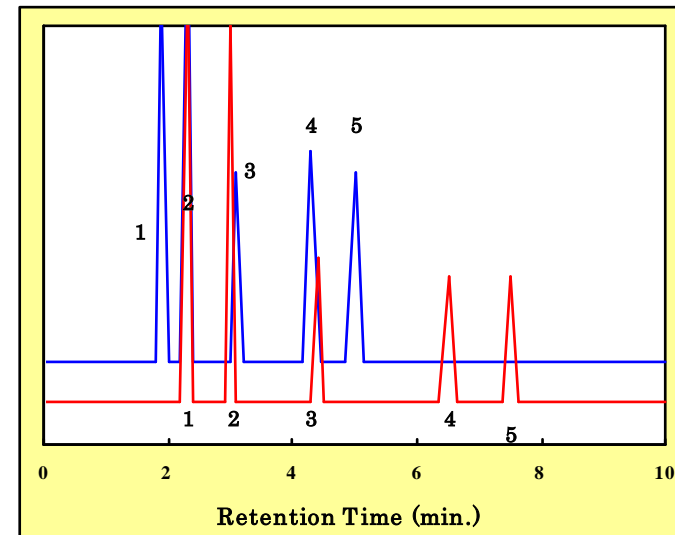


450 m<sup>2</sup>/g, 17% Carbon  
300 m<sup>2</sup>/g, 17% Carbon

Column: 5 mm, 4.6 mm I.D. x 150 mm  
Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=80/20 (1.0 ml/min)  
Temperature: 40° C Detector: UV 254 nm

## Hydrophilic compounds (Nucleosides)

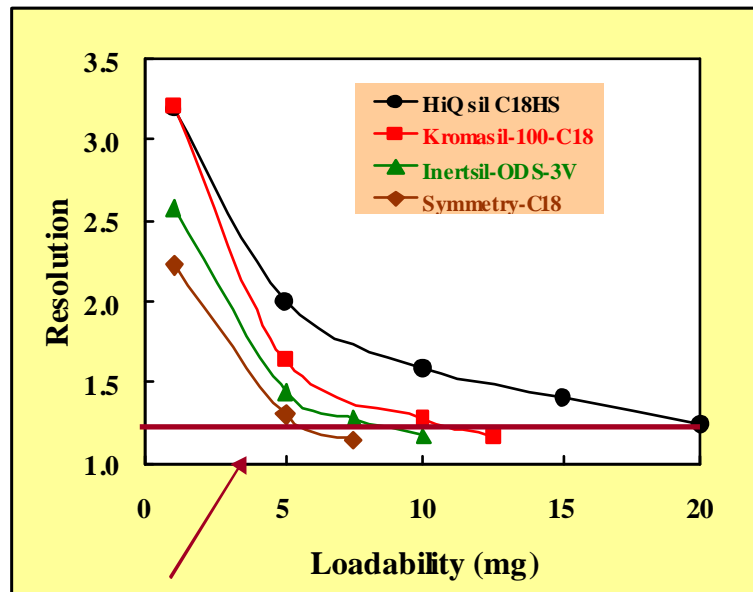
1. Cytosine
2. Uracil
3. Cytidine
4. Uridine
5. Thymine



Column: 5 mm, 4.6 mm I.D. x 150 mm  
Mobile Phase: 100% H<sub>2</sub>O (1.0 ml/min)  
Temperature: 40° C Detector: UV 254 nm

# HiQ sil C18HS :Outstanding loadability

Correlation between resolution and Loadability



Rs=1.25

99.4% separation

Column: 5 mm, 4.6 mm I.D. x 150 mm;  
 Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=70/30;  
 Flow Rate: 1.0 ml/min;  
 Temperature: 30° C; Detector: UV 254 nm;  
 Solutes: Methyl Benzoate/Ethyl Benzoate (1/1).

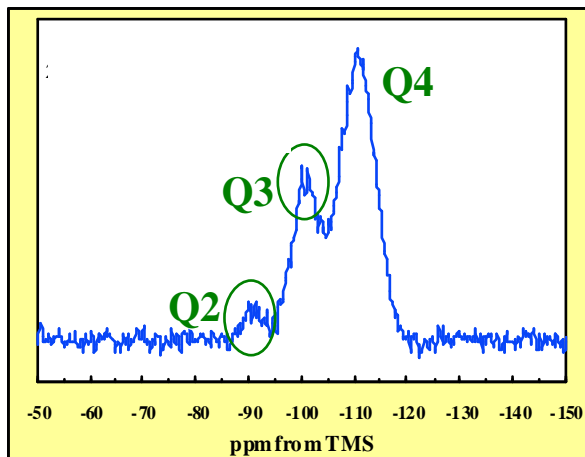
Comparison of Maximum Loadability

Grade	Maximum Loadability (mg)
HiQ sil C18HS.	19.7
Kromasil-100-C18	10.6
Inertsil-ODS-3V	8.2
Symmetry-C18	5.8

# Convventional Endcap

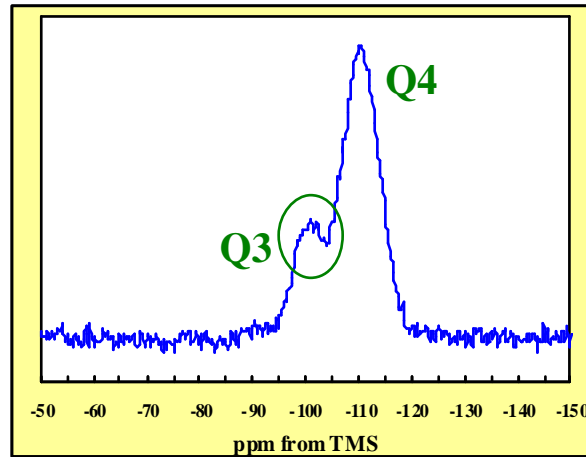
<sup>29</sup>Si-MASNMR

Raw Material



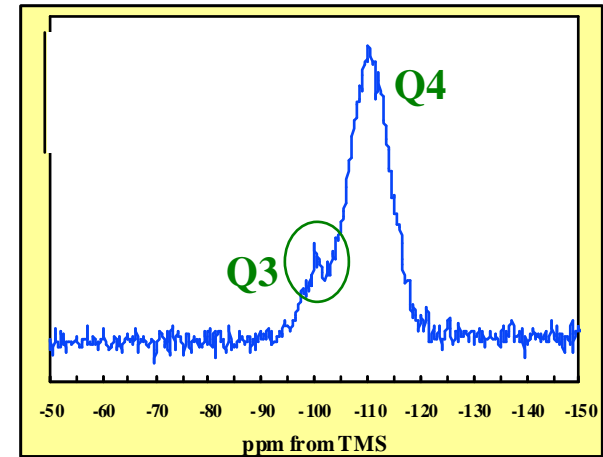
<sup>29</sup>Si-MASNMR

ODS-Bonded

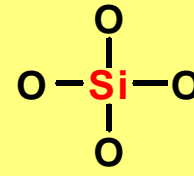
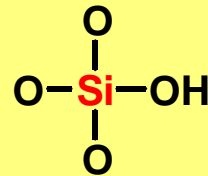


<sup>29</sup>Si-MASNMR

Endcapped



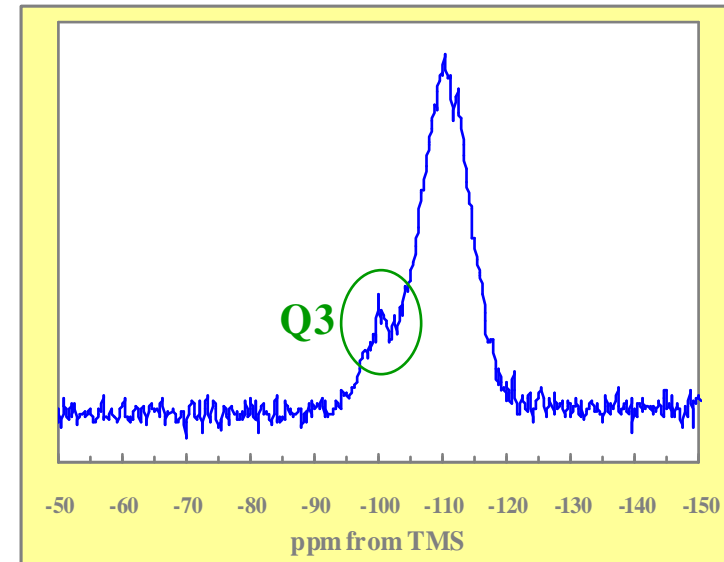
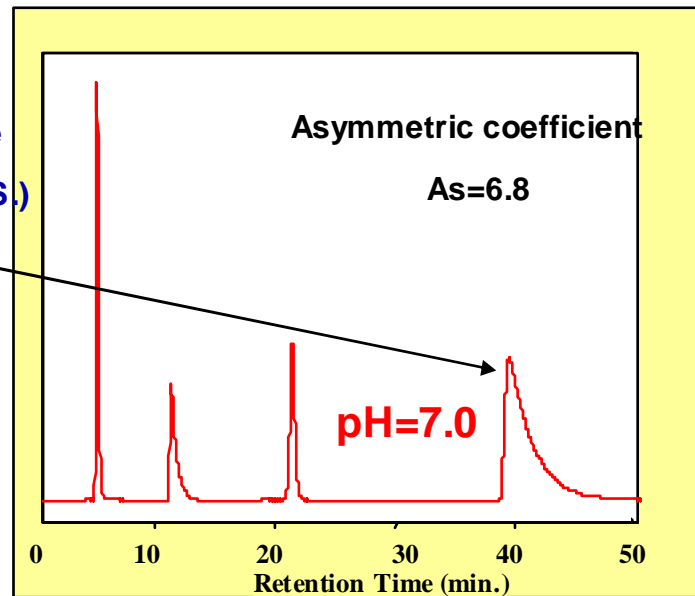
Q2 :Geminal Silanol, Q3 :Isolated Silanol, Q4:Siloxane Moiety



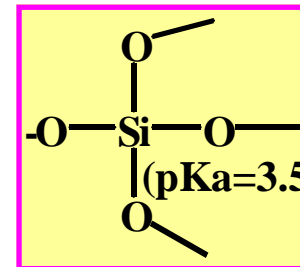
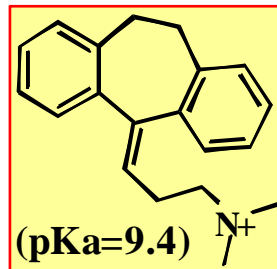
# Residual Silanor and Peak Tailing

## Basic Drugs

1. Propranolol
2. Diphenhydramine
3. Acenaphthene (I.S.)
4. Amitriptyline



Basic compound



Residual Silanol

# High performance silica gel HiQ sil C18HS :Reduction of Residual Silanol

Pre surface modification  
HiQ SIL

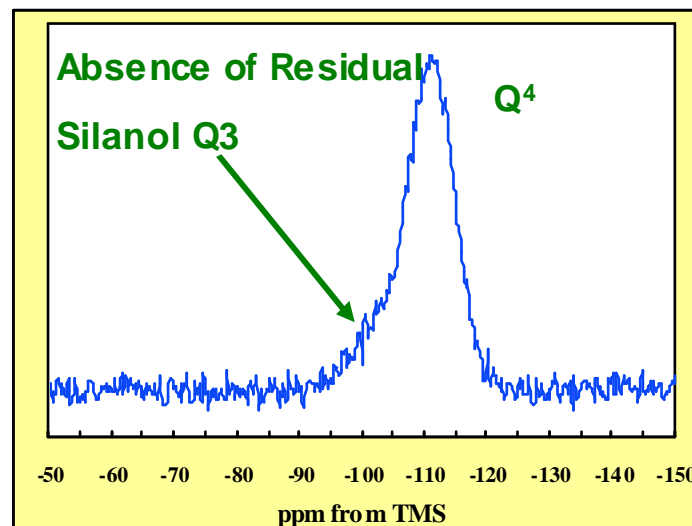
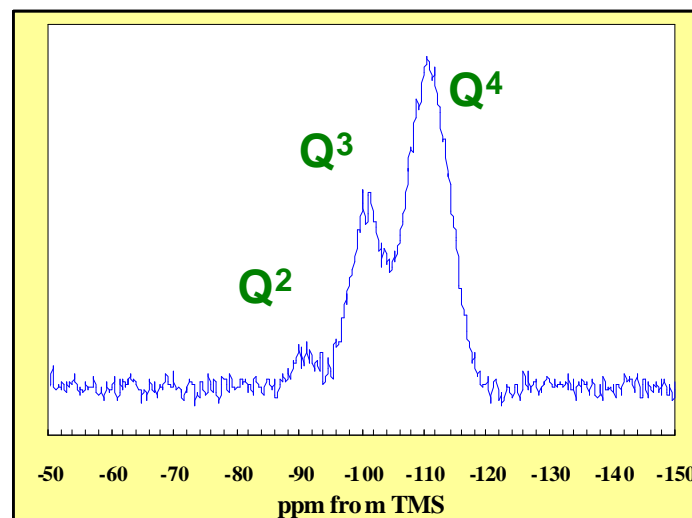
Q<sup>2</sup>: Geminal Silanol

Q<sup>3</sup>: Isolated Silanol

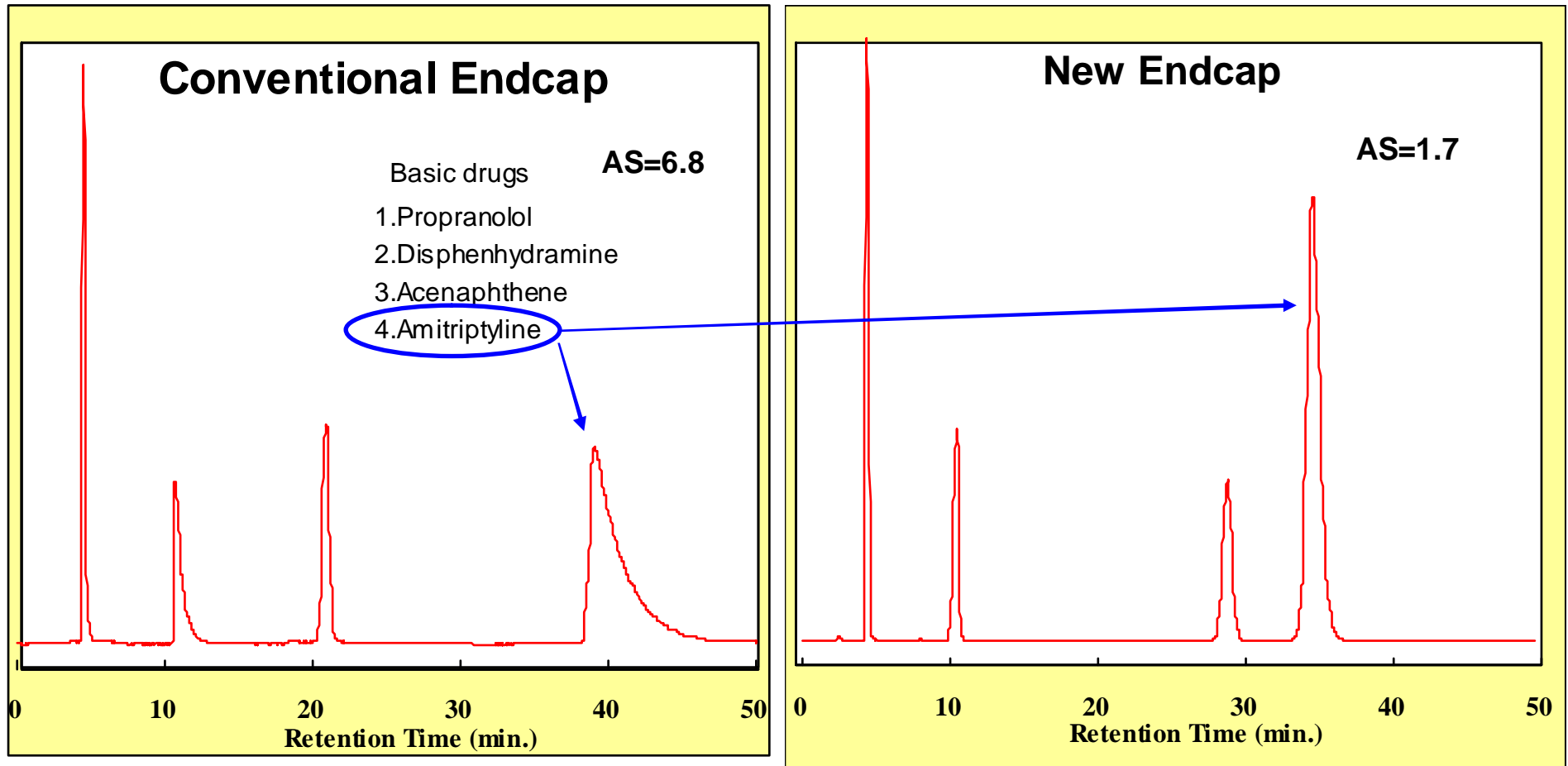
Q<sup>4</sup>: Silaxane Moiety

Post surface modification  
HiQ sil C18HS

Instrument: JEOL ECP-500; Measurement  
Method: Single Pulse Magic Angle Spinning;  
Field Strength: 11.7 T; Resonance Frequency:  
99.36 MHz for <sup>29</sup>Si.



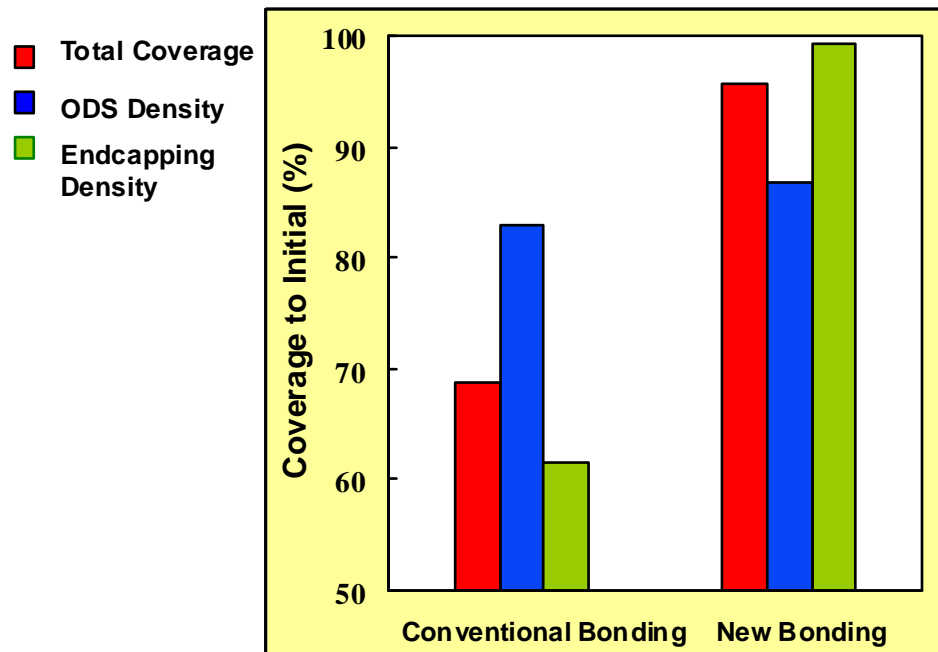
# HiQ sil C18HS :Improvement of peak shape



Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35;  
Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.

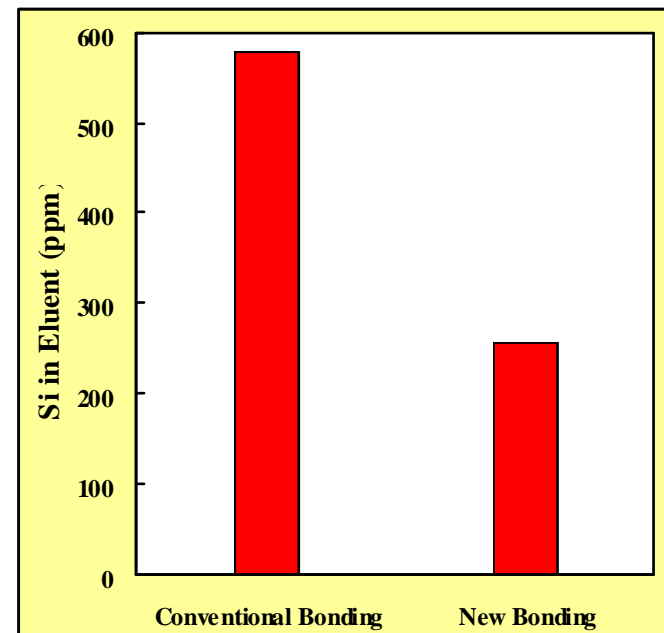
# HiQ sil C18HS :Improvement of acid and alkalinity proof

## Acid proof (pH=1)



Column Size: 4.6 mm I.D. x 150 mm Length;  
Mobile Phase: CH<sub>3</sub>CN/1% TFA (pH=1) = 10/90;  
Temperature: 70°C; Flow: 0.5 ml/min; Time for Purge: 20 h.

## Alkalinity proof(pH=12)



Column Size: 4.6 mm I.D. x 150 mm Length;  
Mobile Phase: CH<sub>3</sub>CN/20mM Na<sub>3</sub>PO<sub>4</sub>-NaOH (pH=12) = 10/90;  
Temperature: 40°C; Flow: 1.0 ml/min; Time for Purge: 5 h.

# HiQ sil C18HS : Stability test(pH=1.5)

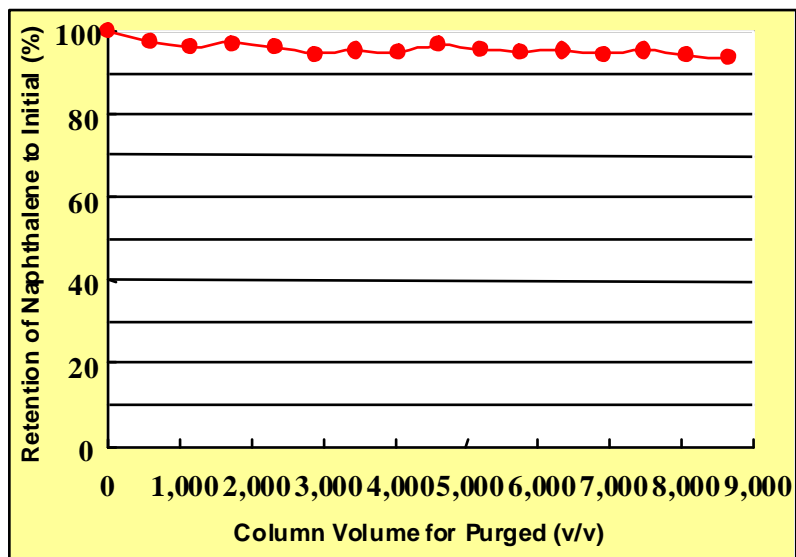
Column: HiQ sil C18HS  
Size: 4.6 mm I.D. x 150 mm

## Acidic Duration Test Condition

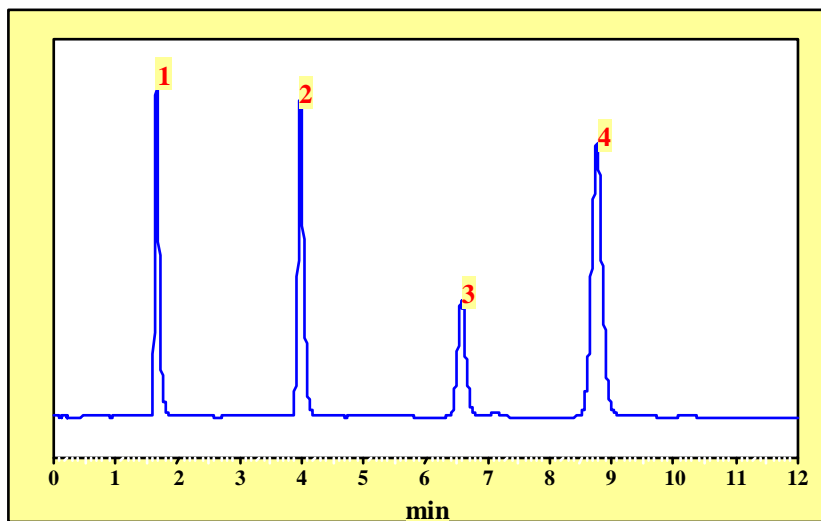
Mobile Phase: CH<sub>3</sub>CN/0.1% TFA aq.  
(pH=1.5) = 50/50;  
Flow Rate: 1.0 ml/min; Temperature: 40°C.

## Chromatographic Test Condition

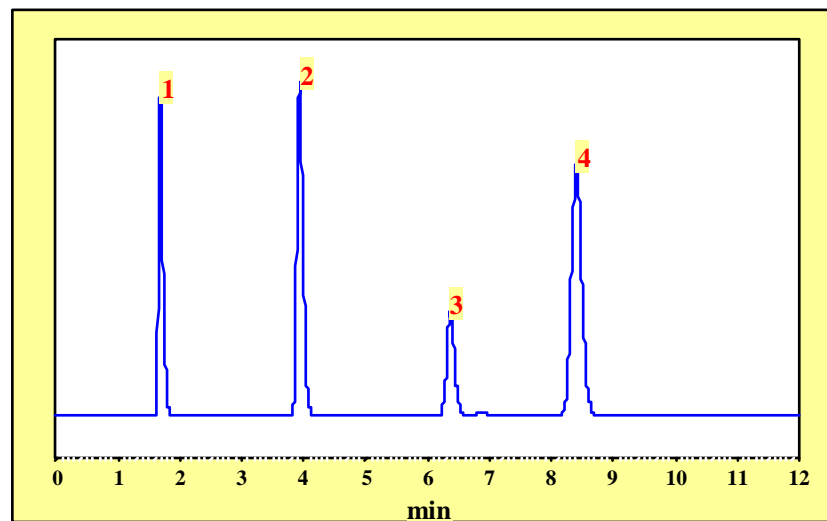
Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=70/30;  
Flow Rate: 1.0 ml/min; Temperature: 40°C;  
Detector: UV 254 nm  
Analyst: 1. Uracil, 2. Methyl Benzoate,  
3. Toluene, 4. Naphthalene



Initial



After Acid Purged for 360h





# HiQ sil C18HS : Long term stability test(pH=9.0)

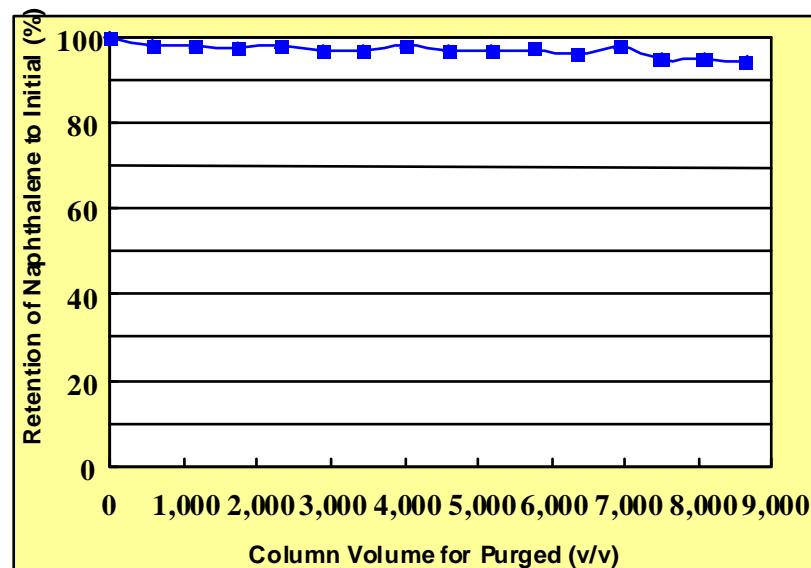
Column: HiQ sil C18HS  
Size: 4.6 mm I.D. x 150 mm

## Acidic Duration Test Condition

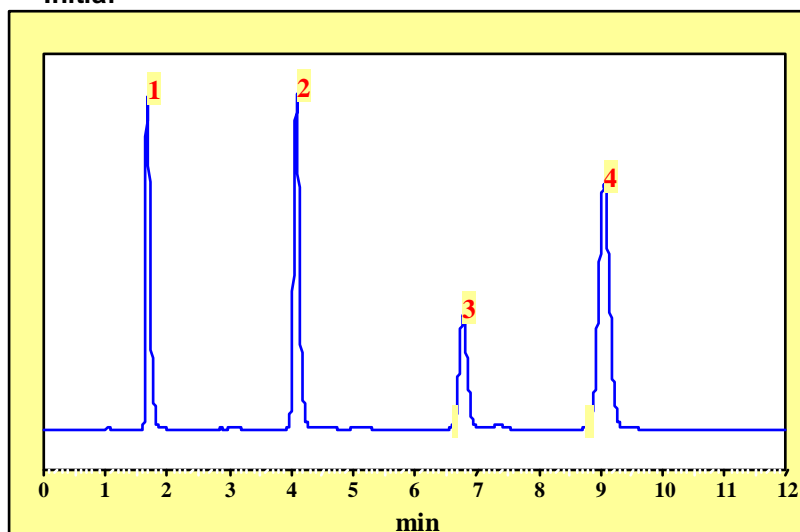
Mobile Phase: CH<sub>3</sub>CN/20mM K<sub>2</sub>HPO<sub>4</sub> aq.  
(pH=9.0) = 50/50;  
Flow Rate: 1.0 ml/min; Temperature: 40°C.

## Chromatographic Test Condition

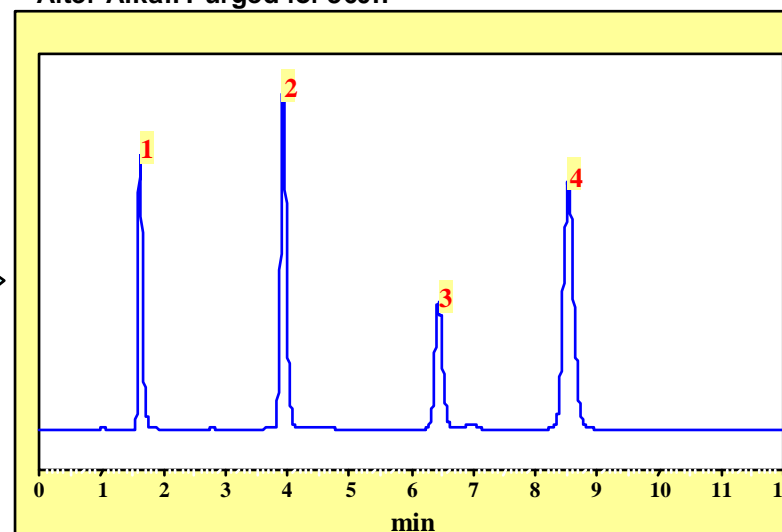
Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=70/30;  
Flow Rate: 1.0 ml/min; Temperature: 40°C;  
Detector: UV 254 nm  
Analyst: 1. Uracil, 2. Methyl Benzoate,  
3. Toluene, 4. Naphthalene



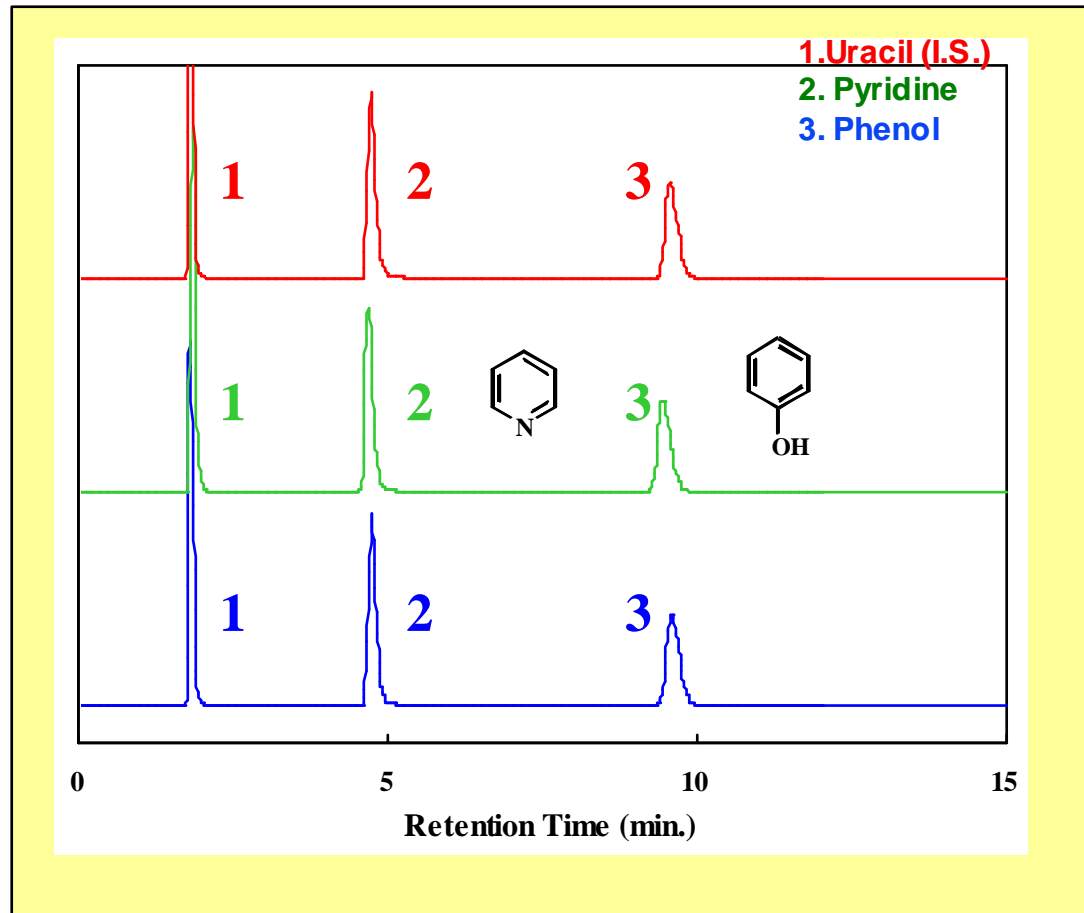
Initial



After Alkali Purged for 360h



# HiQ sil C18HS : Batch-to-batch reproducibility



Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=30/70;  
Flow Rate: 1.0 ml/min; Temperature: 40°C; Detector: UV 254 nm.

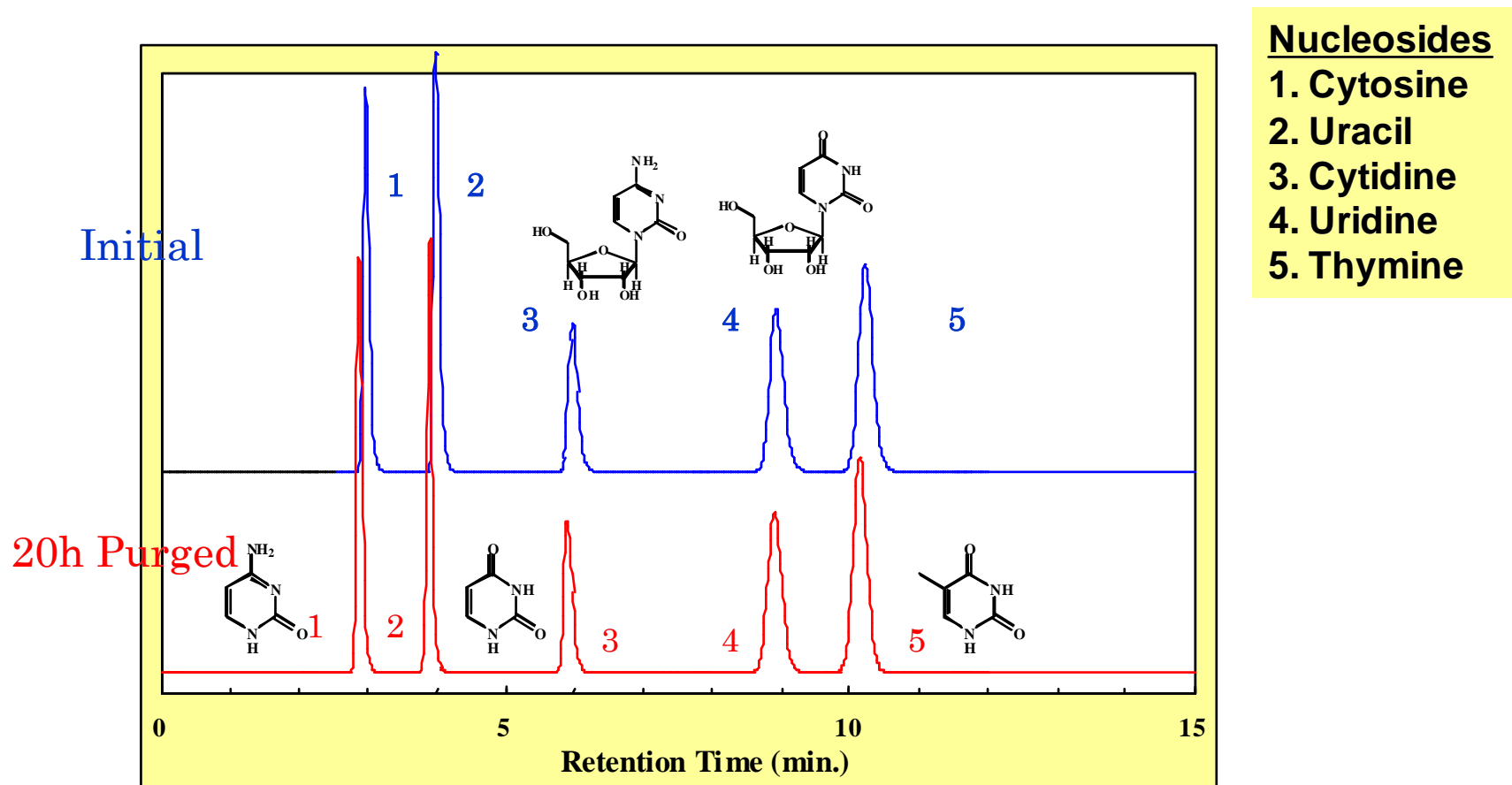
a (Pyridine/Phenol)	As (Pyridine)
0.37	1.8
0.37	1.7
0.37	1.6

a: Relative Retention

As: Asymmetric Factor

at 10% Peak Height

**HiQ sil C18HS :**  
**Showing good retention even with 100% H<sub>2</sub>O mobile phase**

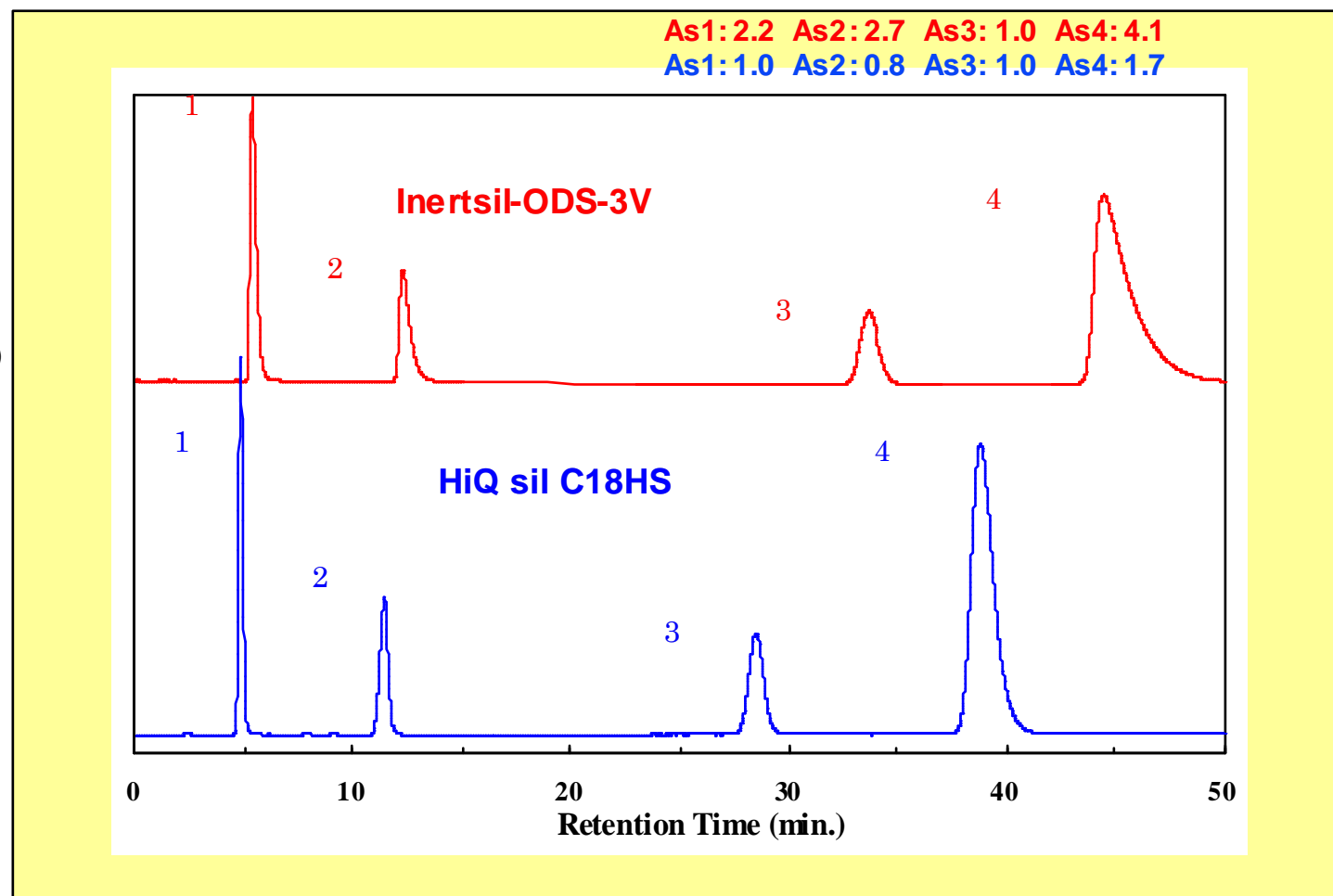


Column: 4.6 mm I.D. x 150 mm; Mobile Phase: 100% H<sub>2</sub>O;  
Flow Rate: 1.0 ml/min; Temperature: 40°C; Detector: UV 254 nm.

# New high performance silica gel HiQ sil C18HS : Comparison with Inertsil-ODS-3V

## Basic Drugs

1. Propranolol
2. Diphenhydramine
3. Acenaphthene (I.S.)
4. Amitriptyline

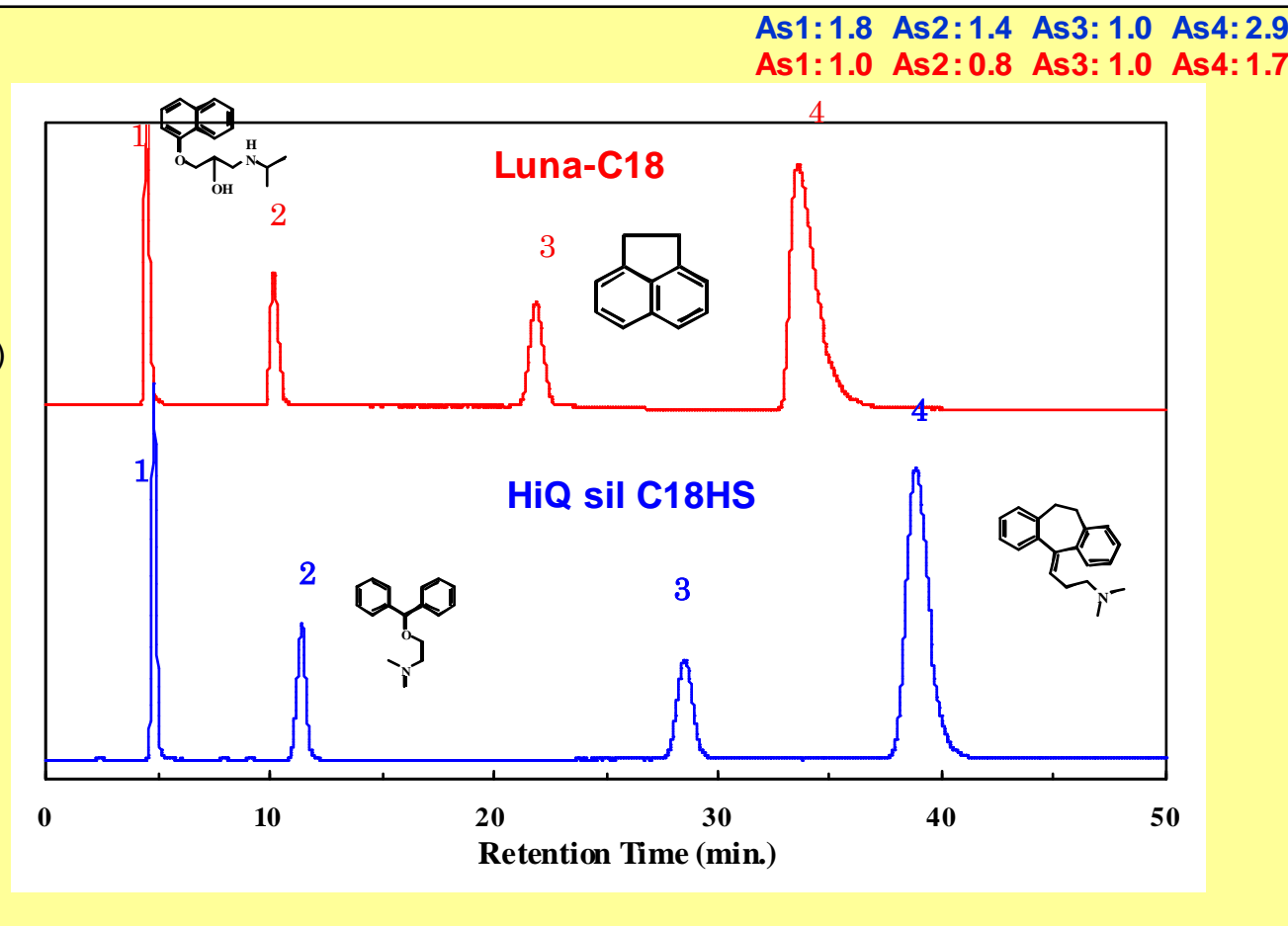


Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35;  
Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.

# HiQ sil C18HS : Comparison with Luna-C18

## Basic Drugs

1. Propranolol
2. Diphenhydramine
3. Acenaphthene (I.S.)
4. Amitriptyline

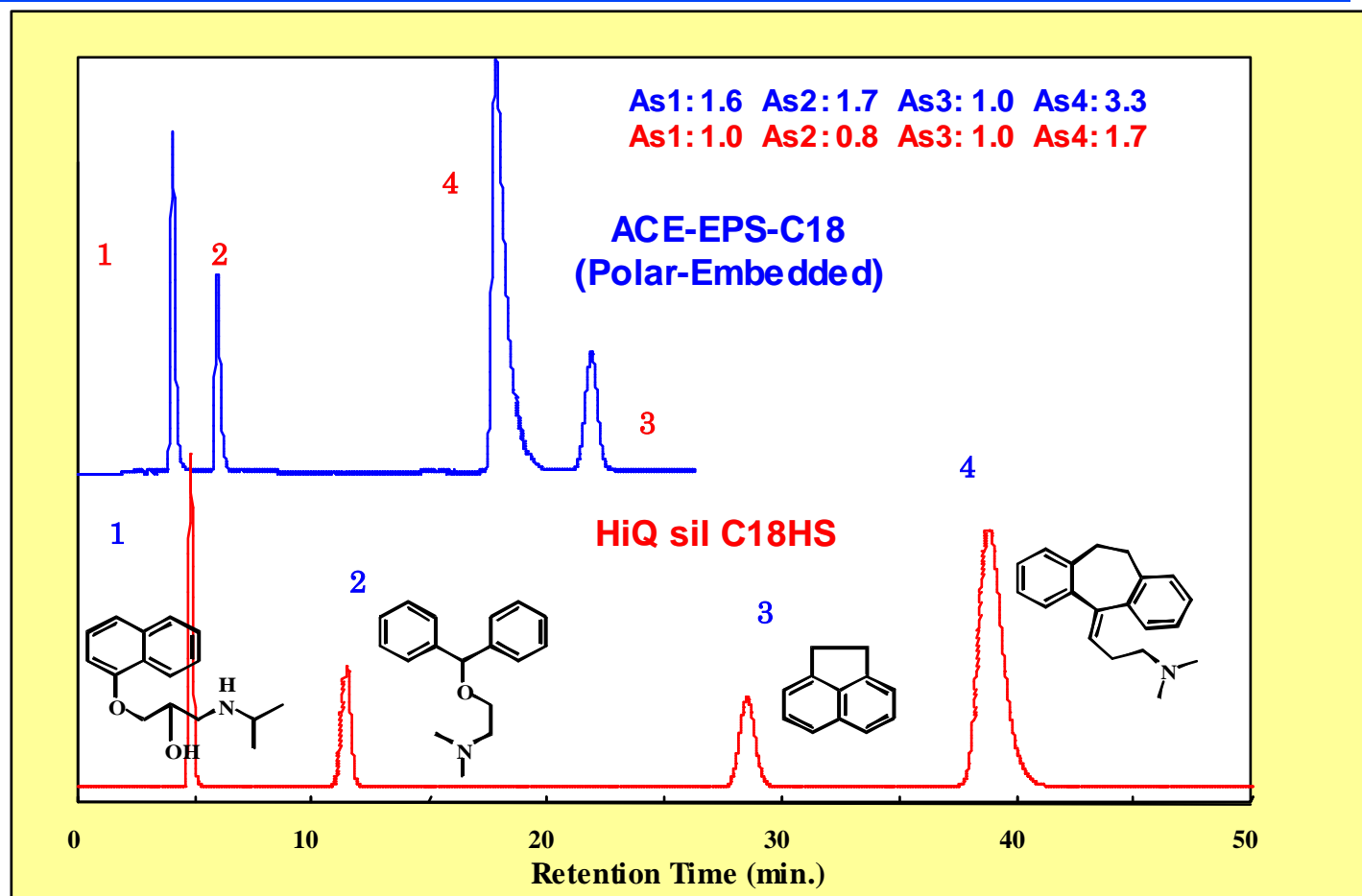


Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35;  
Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.

# HiQ sil C18HS : Comparison with ACE-EPS-C18

## Basic Drugs

1. Propranolol
2. Diphenhydramine
3. Acenaphthene (I.S.)
4. Amitriptyline

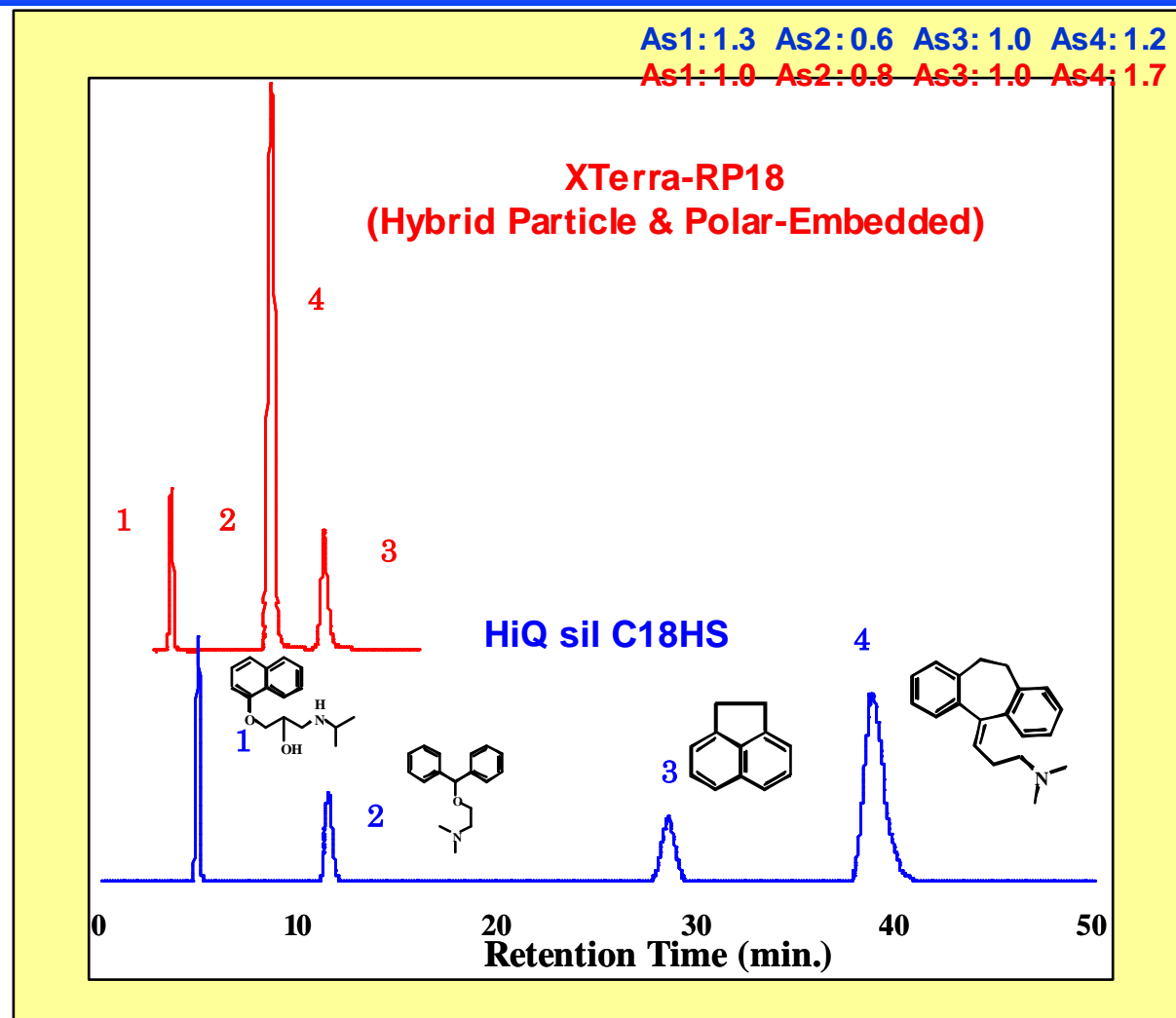


Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35; Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.

# HiQ sil C18HS : Comparison with XTerra-RP18

## Basic Drugs

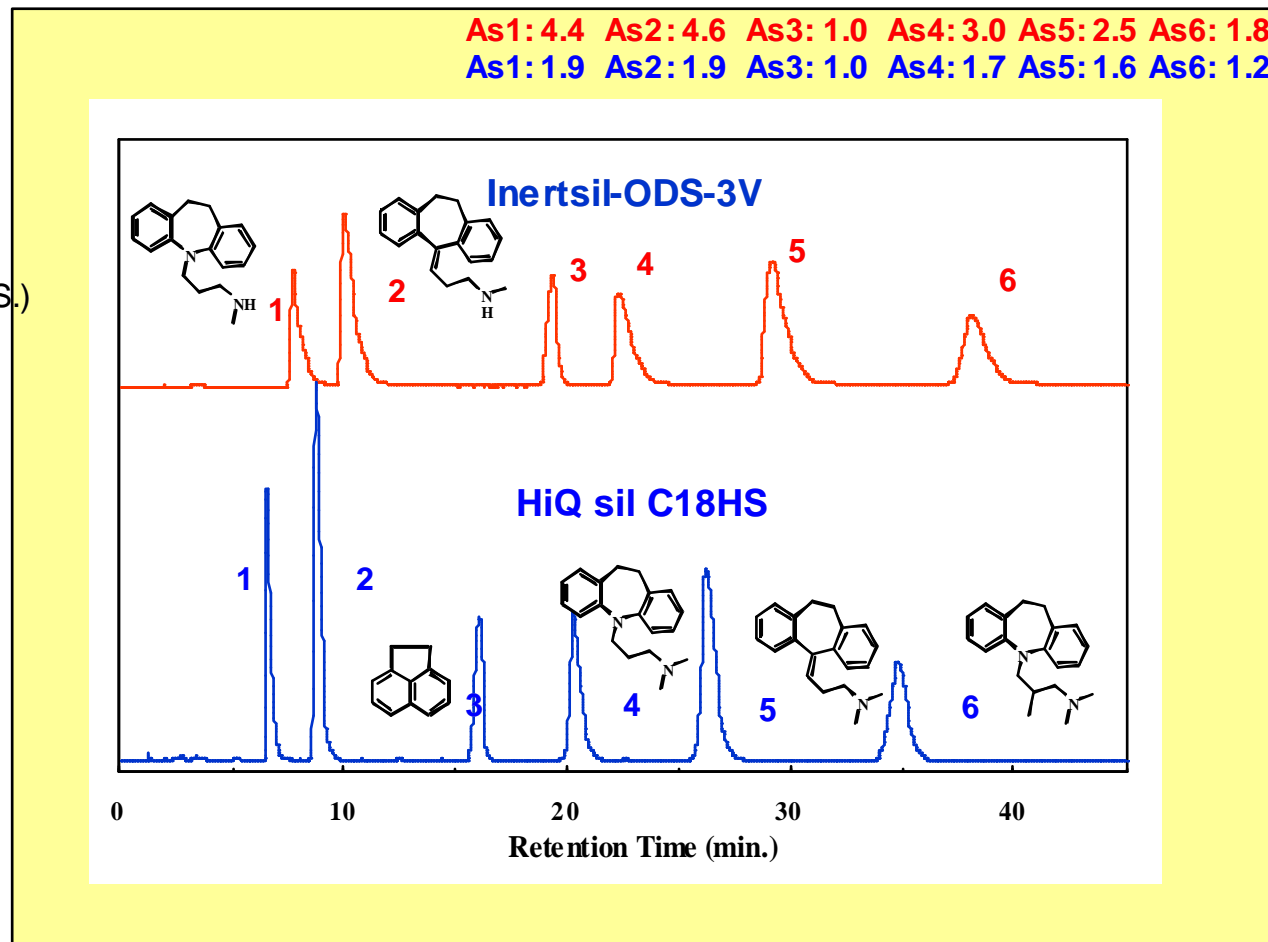
1. Propranolol
2. Diphenhydramine
3. Acenaphthene (I.S.)
4. Amitriptyline



Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35; Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.

# HiQ sil C18HS : Comparison with Inertsil-ODS-3V

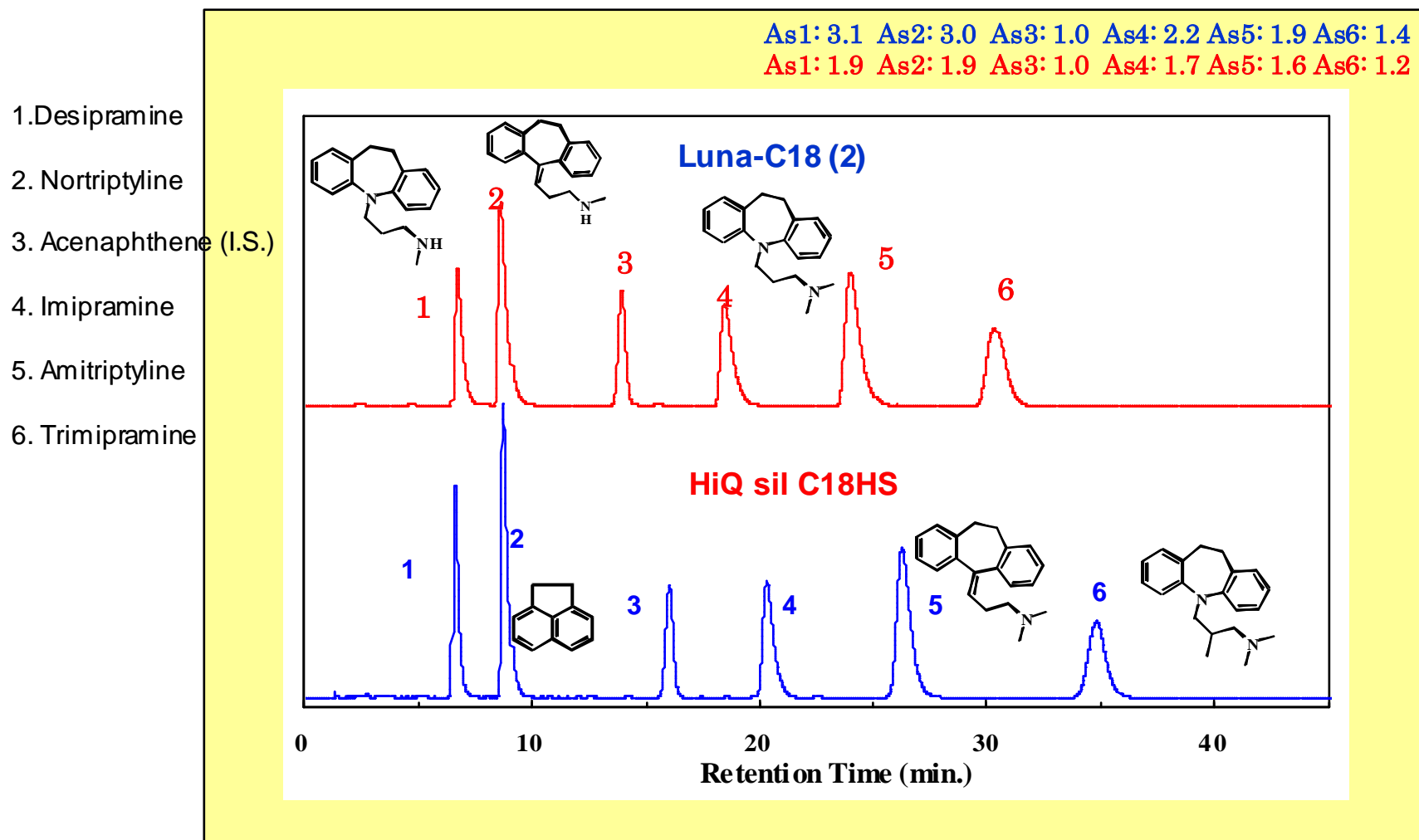
1. Desipramine
2. Nortriptyline
3. Acenaphthene (I.S.)
4. Imipramine
5. Amitriptyline
6. Trimipramine



Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=70/30; Flow Rate: 1.2 ml/min; Temperature: 30°C; Detector: UV 240 nm.

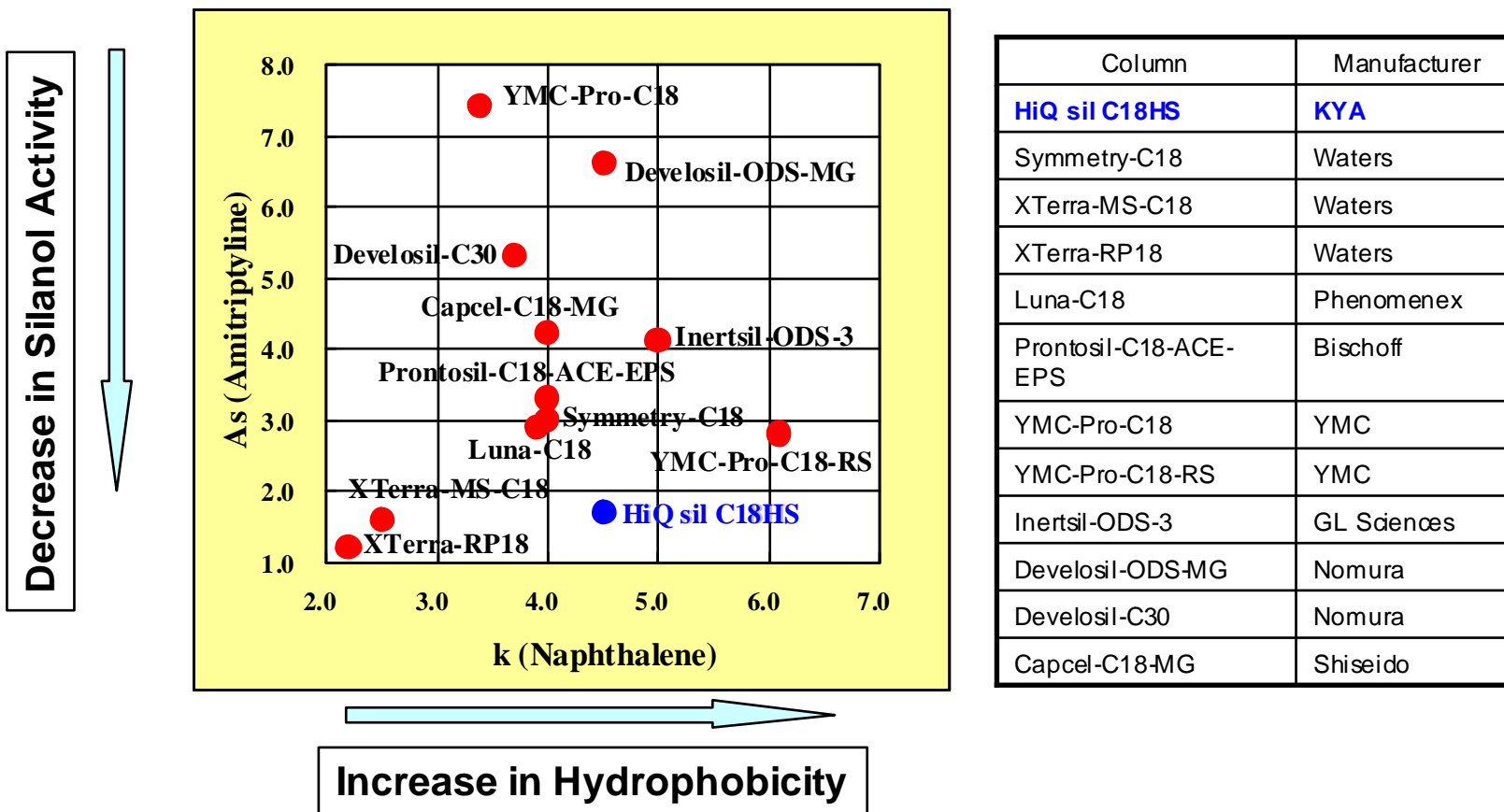


# HiQ sil C18HS : Comparison with Luna-C18 (2)



Column: 4.6 mm I.D. x 150 mm; Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=70/30;  
 Flow Rate: 1.2 ml/min; Temperature: 30°C; Detector: UV 240 nm.

# C18 Column Comparison



Note: 5 mm ODS-Bonded Phases except Develosil-C30 (C30-Bonded), ACE-EPS and X Terra-RP (Polar-Embedded).

Column Size: 4.6 mm I.D. x 150 mm Length.

Retentive Capacity of Naphthalene

Mobile Phase: CH<sub>3</sub>OH/H<sub>2</sub>O=70/30; Flow Rate: 1.0 ml/min; Temperature: 40°C; Detector: UV 254 nm.

Asymmetric Factor of Amitriptyline (10% Peak Height)

Mobile Phase: CH<sub>3</sub>OH/20 mM K<sub>2</sub>HPO<sub>4</sub>-KH<sub>2</sub>PO<sub>4</sub> (pH=7.0)=65/35; Flow Rate: 1.4 ml/min; Temperature: 20°C; Detector: UV 240 nm.