



COSMOSIL

维生素的高效液相色谱分析

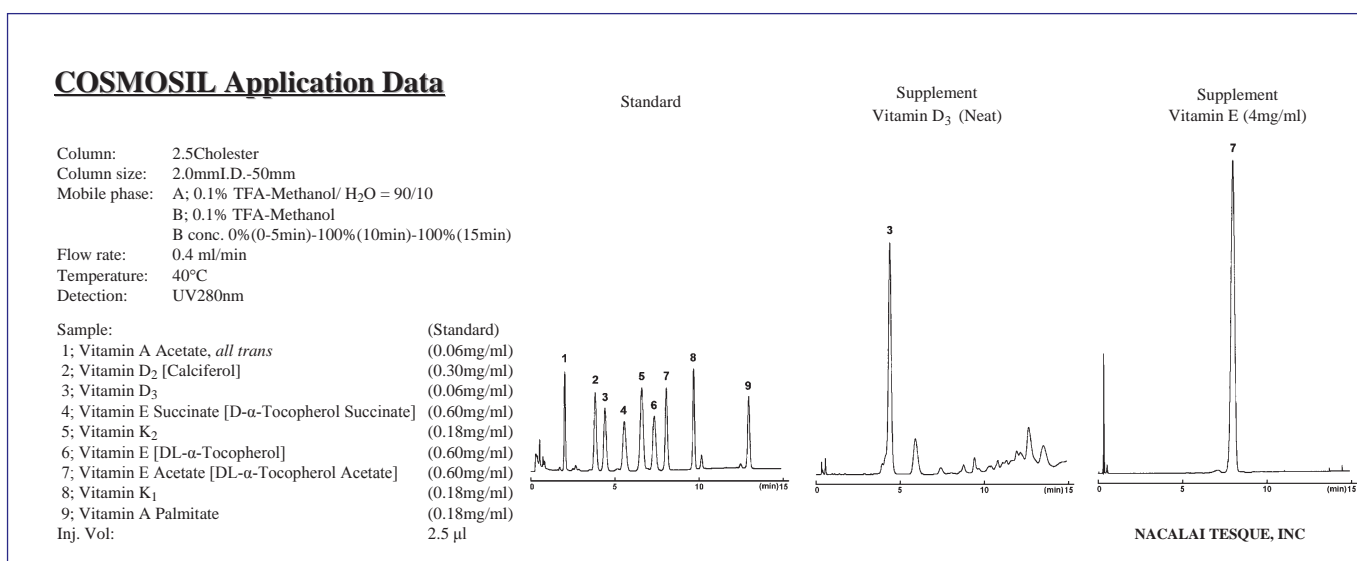
Technical Note

维生素是痕量调节生理功能的有机化合物。维生素主要有两种，水溶性和脂溶性维生素。维生素的高效液相色谱法(HPLC)分析可以通过使用COSMOSIL 5C18-MS-II, PAQ, Cholester 和 π NAP 色谱柱来实现。

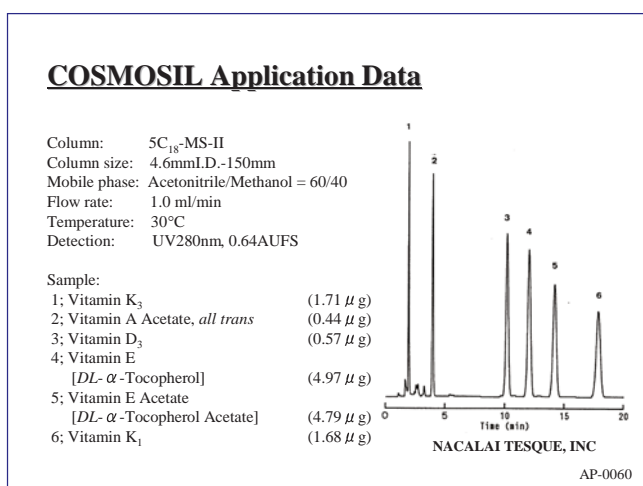
脂溶性维生素

(1) 脂溶性维生素

- 使用COSMOSIL 2.5 Cholester 色谱柱分析营养品

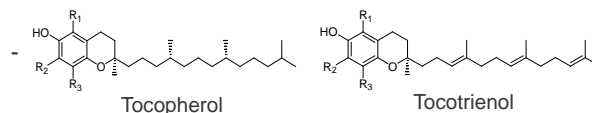


- 使用COSMOSIL C₁₈-MS-II 色谱柱分析脂溶性维生素

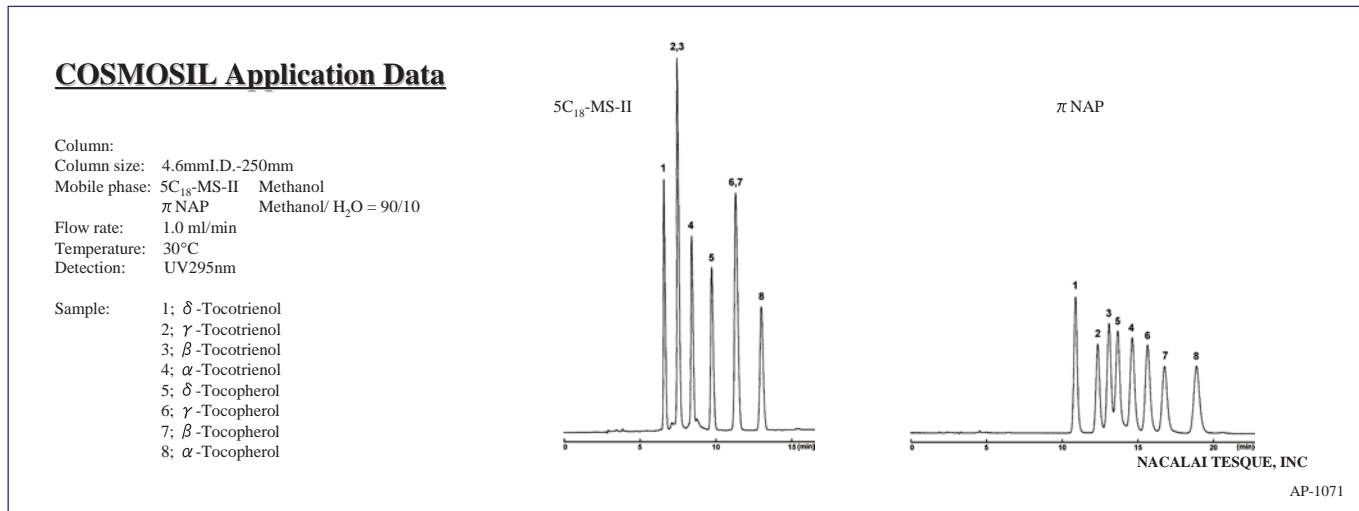


(2) Vitamin E

柱维生素E等结构同分异构体由于类似的疏水性难以使用C18进行分析，COSMOSIL π NAP可以对类似结构提供完全的分。



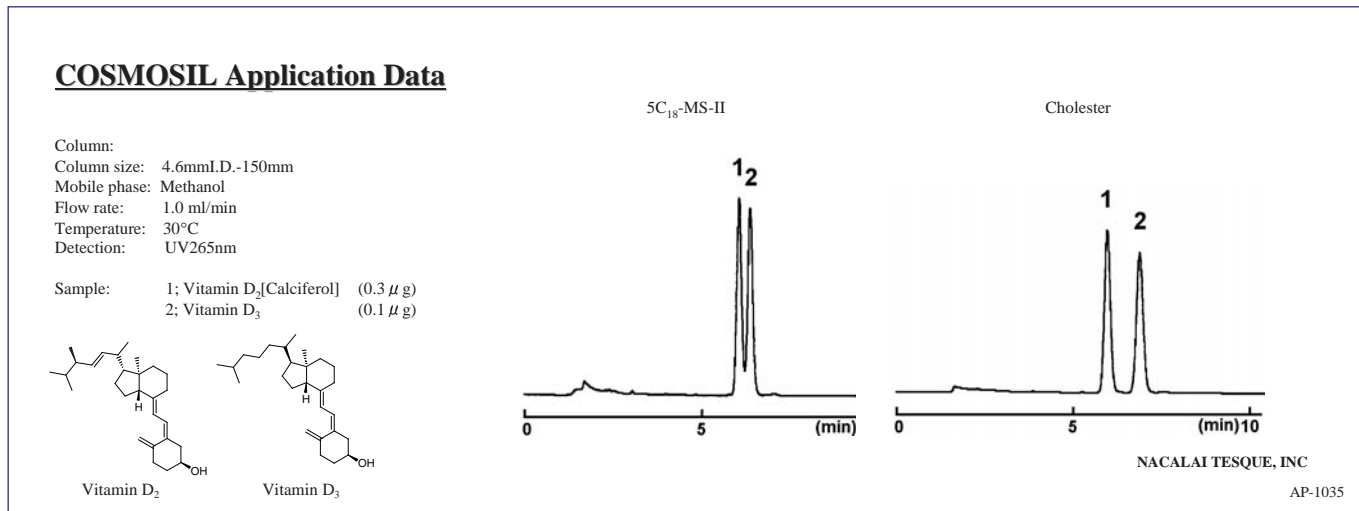
• 生育酚/生育三烯酚的同分异构体



(3) 维生素D

柱维生素D2和D3难以使用C18色谱柱进行分析，COSMOSIL Cholester可以对类似结构提供完全的分。

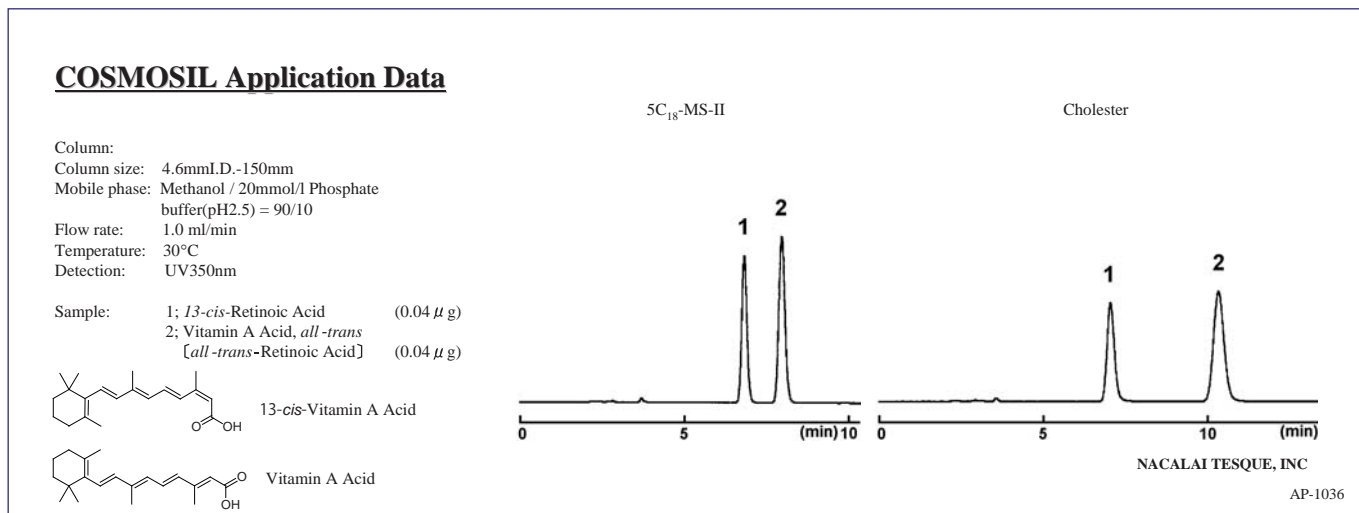
• Vitamin D₂ and D₃



(4) 维生素A

COSMOSIL Cholester 色谱柱可以增强对全反式双键结构维生素A1及A2的分离，以及天然维生素1,3-顺式异构体的分离。

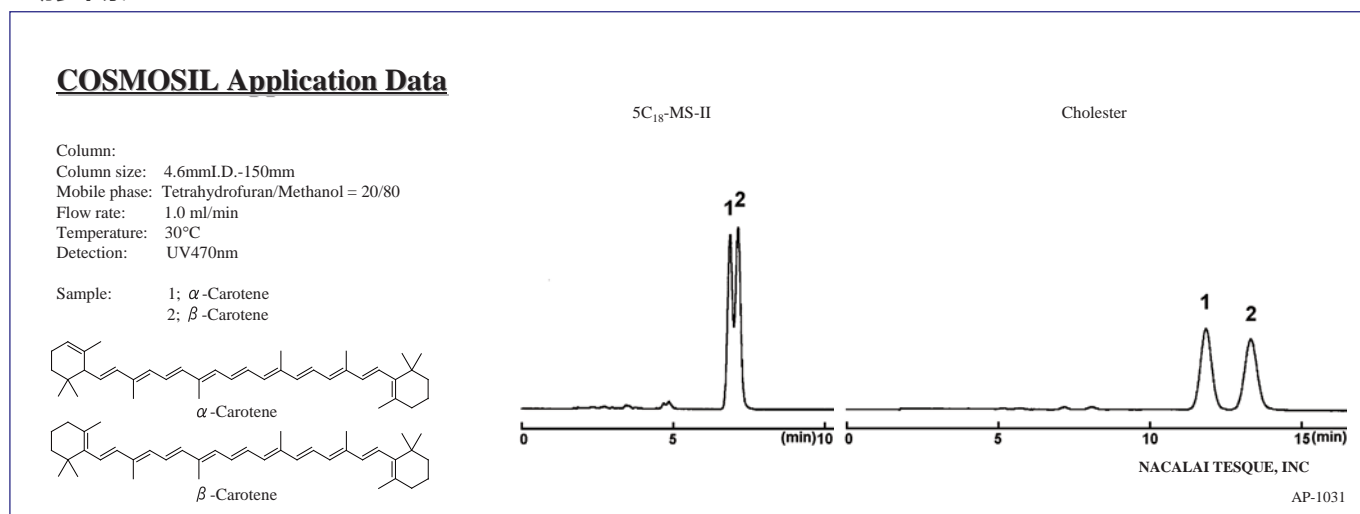
• 13-顺式-维生素A酸和维生素A



(4) 维生素 A (continued)

维生素A原(胡萝卜素)是一个天然类胡萝卜素色素,在体内改变成维生素A(视黄醇)。COSMOSIL cholester色谱柱对维生素A原、beta和alpha胡萝卜素提供改进的分离性

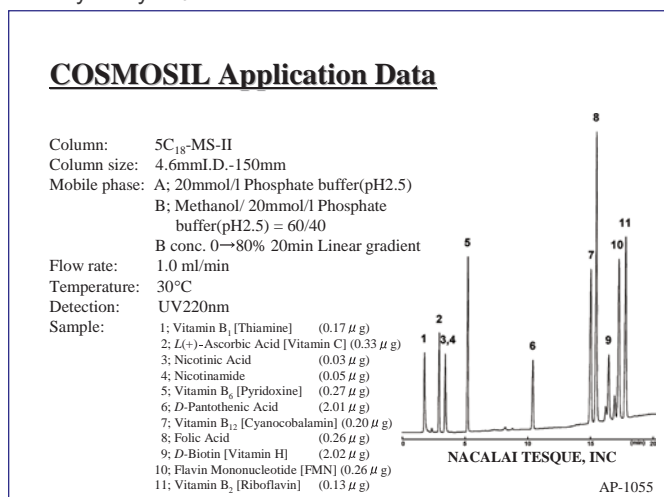
• 胡萝卜素



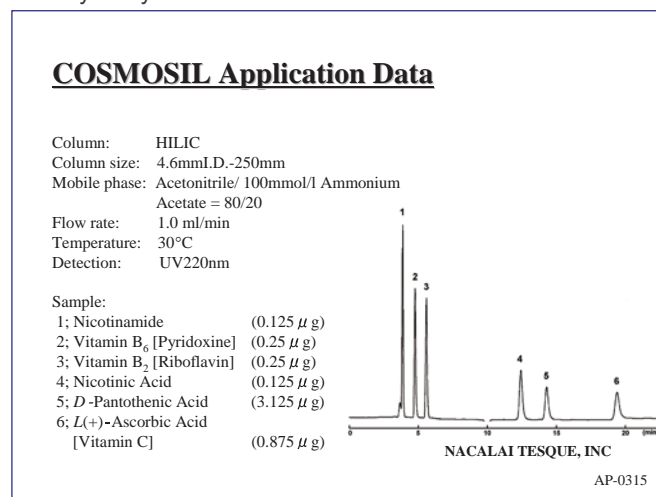
水溶性维生素

(1) 水溶性维生素

• Analysis by C₁₈-MS-II



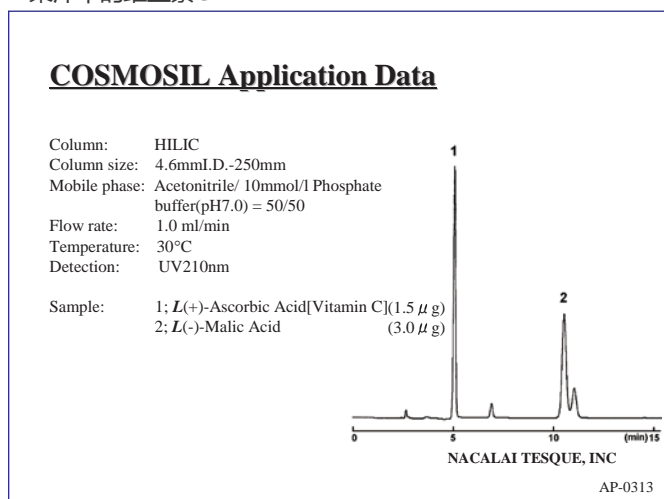
• Analysis by HILIC



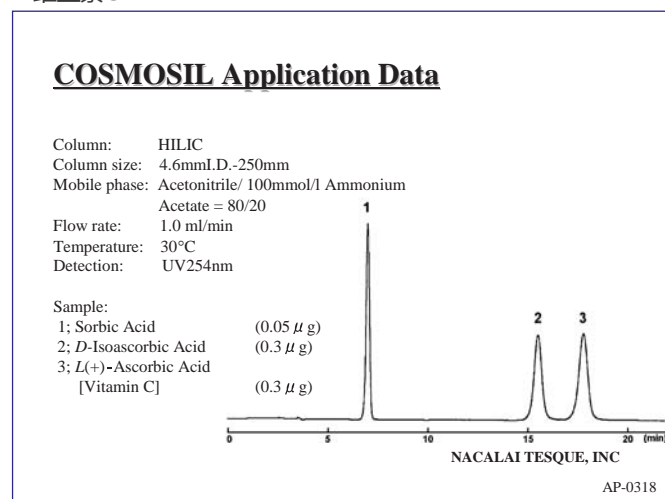
(2) 维生素C

使用COSMOSIL HILIC可以改进的对维生素C衍生物的分析, 此类产品使用普通的色谱柱很难分析

• 果汁中的维生素C



• 维生素C



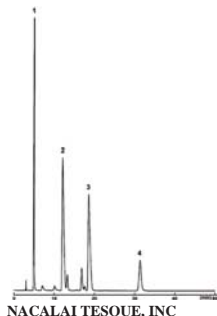
(3) 维生素B

• Vitamin B₂

COSMOSIL Application Data

Column: 5C₁₈-MS-II
Column size: 4.6mmI.D.-250mm
Mobile phase: Methanol/ 0.2%KH₂PO₄ = 20/80
Flow rate: 1.0 ml/min
Temperature: 35°C
Detection: UV260nm

Sample:
1; Adenosine (1.0 μg)
2; Flavin Adenine Dinucleotide [FAD] (4.0 μg)
3; Flavin Mononucleotide [FMN] (4.0 μg)
4; Vitamin B₂ [Riboflavin] (1.0 μg)



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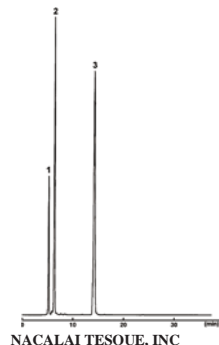
• Vitamin B₁₂

COSMOSIL Application Data

Column: 5C₁₈-MS-II
Column size: 4.6mmI.D.-250mm
Mobile phase: 100mmol/l Sodium *l*-Hexanesulfonate,
Acetonitrile/ 20mmol/l Phosphate
buffer(pH3.5) = 20/80

Flow rate: 0.5 ml/min
Temperature: 40°C
Detection: UV266nm

Sample:
1; Vitamin B₁₂ [Cyanocobalamin] (0.5 μg)
2; Hydroxocobalamin Acetate (0.5 μg)
3; Mecobalamin (1.0 μg)



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(4) 食品中的维生素d

• 功能饮料中的水溶性维生素

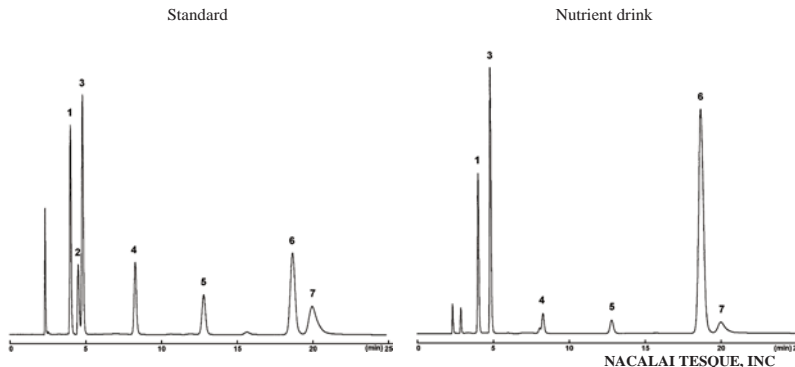
COSMOSIL Application Data

Column: 5C₁₈-PAQ
Column size: 4.6mmI.D.-250mm
Mobile phase: Methanol/ 5mmol/l Sodium *l*-Hexanesulfonate,
20mmol/l Phosphoric Acid = 15/85
Flow rate: 1.0 ml/min
Temperature: 30°C
Detection: UV220nm

Sample: 1; Citric Acid (10mg/ml)
2; *L*-Carnitine (20mg/ml)
3; Nicotinamide (0.2mg/ml)
4; Vitamin B₆ [Pyridoxine] (0.2mg/ml)
5; Vitamin B₁ [Thiamine] (0.2mg/ml)
6; Caffeine (0.2mg/ml)
7; Flavin Mononucleotide [FMN] (0.2mg/ml)

Injection Vol. 1.0 μl

Standard
(10mg/ml)
(20mg/ml)
(0.2mg/ml)
(0.2mg/ml)
(0.2mg/ml)
(0.2mg/ml)
(0.2mg/ml)



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AP-1048

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