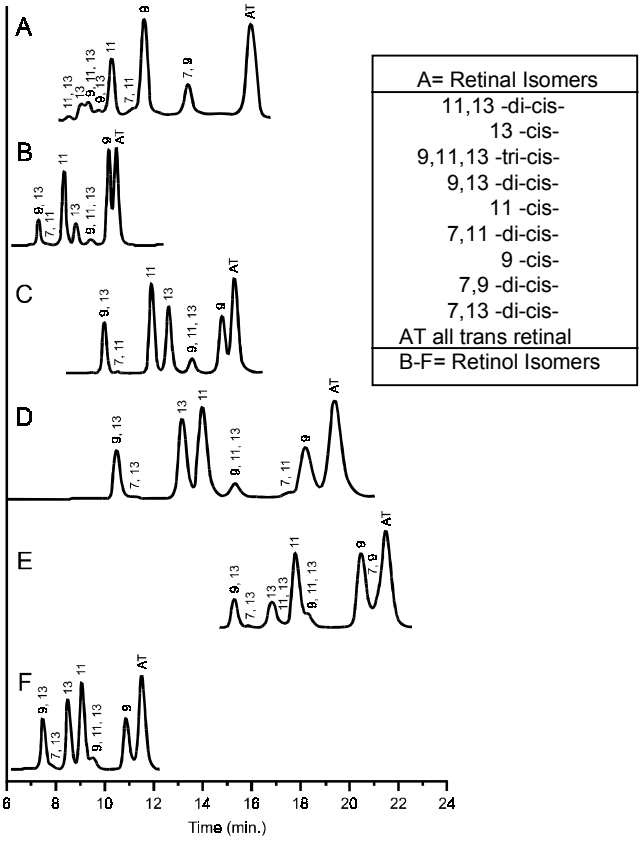
Separation of Retinal (Vitamin A) Isomers: Comparison of Mobile-Phase Composition

Application

Food Analysis

Robert Ricker

HPLC separation of vitamin A isomers (retinal isomers) is important in the analysis of various food stuffs, metabolism of visual pigments, liver function, and the corpus luteum. HPLC has traditionally been carried out using 1,4-dioxane. Efforts here were to find a more friendly solvent and a column that provides good chromatographic performance.



A= Retinal Isomers
11,13 -di-cis-
13 -cis-
9,11,13 -tri-cis-
9,13 -di-cis-
11 -cis-
7,11 -di-cis-
9 -cis-
7,9 -di-cis-
7,13 -di-cis-
AT all trans retinal
B-F= Retinol Isomers

Courtesy of Dr. G. Nöll Physiologisches Inst. -- Justus Liebig Uni. Giessen

Conditions:
ZORBAX Sil (4.6 x 250 mm) (Agilent P/N: 880952-701)
Injection volume 20µL, 25°C

Highlights

- *Various solvent combinations can be used in conjunction with ZORBAX Sil to provide adequate resolution of Vitamin A isomers.*
- *ZORBAX Sil silica provides good peak shape for these retinoids.*

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Chromatogram	Mobile-Phase	Ratio (V/V)	Flow Rate mL/min	Pressure (bar)	λ nm	All Trans at min
A. retinal	n-hexane/t-BME	97:3	2	58	371	15.94
B. retinol	n-hexane/1,4-dioxane	93:7	2	54	320	10.07
C. retinol	n-hexane/1,4-dioxane	94:6	2	67	325	14.90
D. retinol	n-hexane/BME	93:7	4	118	325	19.29
E. retinol	n-heptane/BME	94:6	3	140	325	21.50
F. retinol	n-heptane/BME	93:7	4	187	325	11.25

Robert Ricker is an application chemist based at Agilent Technologies, Wilmington, Delaware.

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Printed in the USA
April 25, 2002
5988-6361EN

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