

-β

2004/06/02

2004/12/26

precursors

-β

.A

.

:

- β - Cis -13

- β - Cis -9

-β -Trans

.

A

-β- :

Determination of the geometrical isomers of β-Carotene in palm oil using high performance liquid Chromatography (HPLC)

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ABSTRACT

An HPLC separation of the geometric isomers of β-carotene was developed to evaluate the Provitamin A content of Palm oil . Different stationary phases were studied, the best separation of all-trans-, 9-cis- and 13-cis-β-carotene were obtained with calcium hydroxide columns using isocratic elution . Eluent was n-hexane or isooctane or mixtures of them. These techniques were used to determine the provitamin A content of palm oil .

Key words : β - Carotene – Vitamin A – Liquid Chromatography .

.Carotenoids

(β -ionone) $-\beta$
 .Precursors for Vitamin A A C -11
 A

./1/ reversed Phase

$-\beta$
 $-\beta - \text{Cis} -13$. /2/ A
 $-\beta - \text{trans}$ 38% 53% $-\beta - \text{Cis} -9$
 $\text{cis} -13$ $-\alpha - \text{trans}$ /3/
 23% 22% 37% $-\alpha - \text{cis} -9$ $-\alpha -$
 . /4/ $-\beta - \text{trans}$
 /5 , 6/
 A $-\beta - \text{trans}$

$-\beta$

.A
 A

A

. /7/

C₁₈

/8/

/12/

/10 , 11/

/9/

. /13/

-β

.A

: -1

16 10%

/ ()

Jasco

-2

:

: 125x4 mm I.D Lichrospher – 100 RP-C18, 5μm

10μl Rheodyne Model :

UV-VIS (UV-970) :

470 nm :

:

A -3

A
.2 , 3/

6 μg RE

-β-

(-)

.(- C₁₈) (-) (-)

10:90

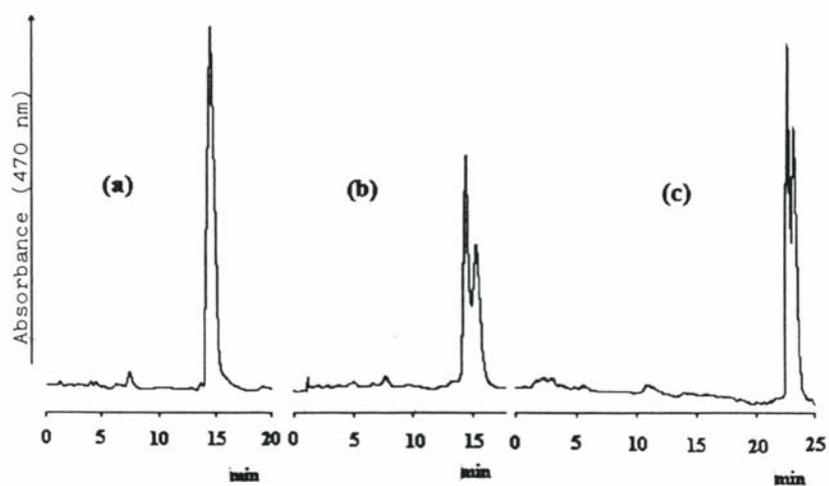
:

Cis-Isomers

. /

(1)

C18



(b,c) (a) $-\beta$ -trans (1)

Column 125x4 mm I.D. with LiChrospher 100 RP-18, 5 μ m :
 = (c) / 1 / (10:90) : = (a,b) :
 / 0.7 5 50% (15)
 470 nm :

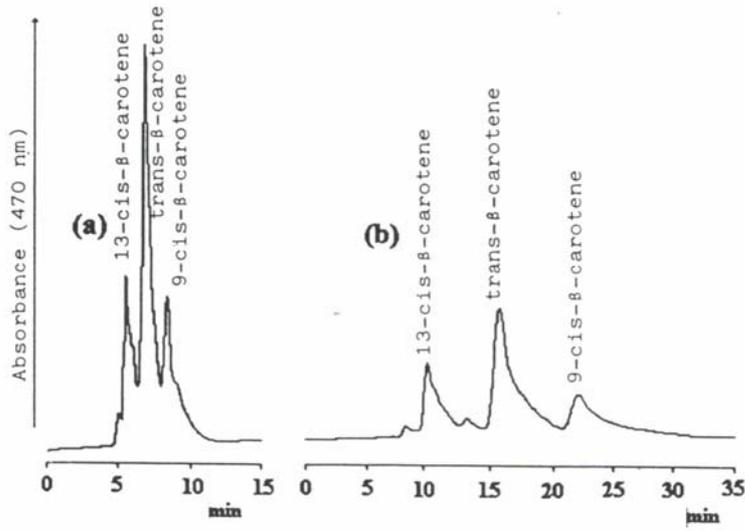
Ca(OH)₂

.0.5 ml / min

$-\beta$
 (2)

(2)

 $-\beta$ -trans



-β-trans

(2)

Column 250x2.2 mm I.D. with Ca(OH)₂ :

/ 0.5

(b)

(a) :

470 nm

:

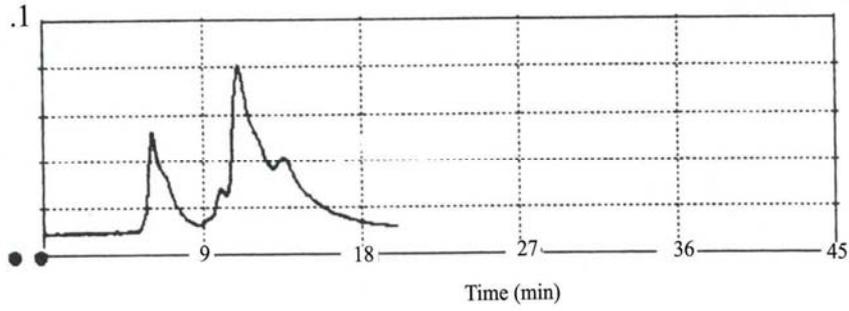
-β

.RE

(3)

-β - trans

- β - Cis -13



(3)

Column 250x2.2 mm I.D. with Ca(OH)₂ :
 / 0.5 :
 440 nm :

(1)

. A

A

(1)

RE / 100 g	(mg/100g) A					
	9-is-β-Carotene	trans-β-Carotene	13-cis-β-Carotene	α-Carotene		
3960	2.36	19.6	1.37	5.67	1	
	1.43	19.2	0.77	5.77	2	
	2.11	19.9	1.45	5.42	3	

-β

(1)

-β

.A

- β- trans

- α

3960 RE

/14/

-β

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