LT032

GL Sciences Inc.

Analysis of Vitamin A in Foods by HPLC

Vitamin A is a micronutrient found in foods, in addition there are other compounds that have vitamin A activity; retinols such as alcoholic retinol and esterified palmitate retinol, carotenoids such as β-carotene and cryptoxanthin.

See Technical Note No. 28 for An Analysis of Carotenes.

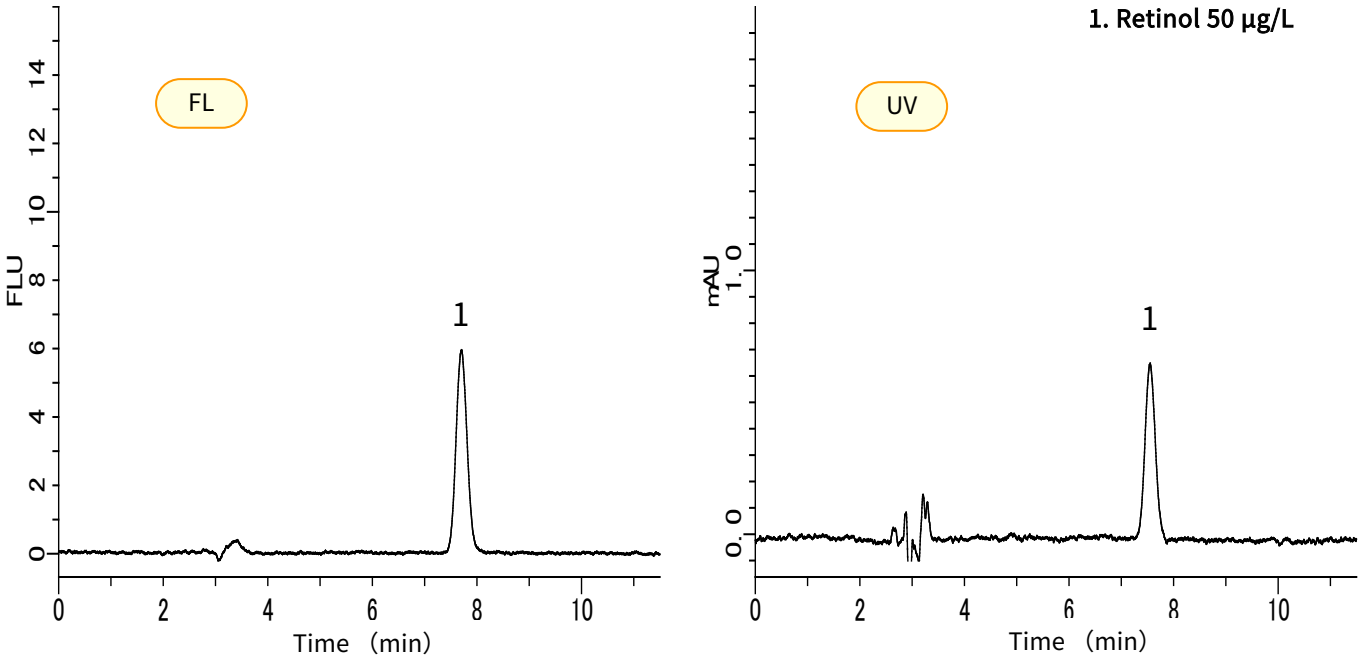
In this report, retinol was analyzed as an ingredient in accordance with the Food Sanitation Inspection Guidelines.

Retinols in samples were saponified and hydrolyzed to retinol. A liquid-liquid extraction was then performed, the concentrated sample was injected onto an HPLC with UV and fluorescence (FL) detectors.

The analysis of vitamin A in foods, as shown in the following pages, can be performed well with UV detection. However, FL detectors are more sensitive for samples with trace amounts of vitamin A.

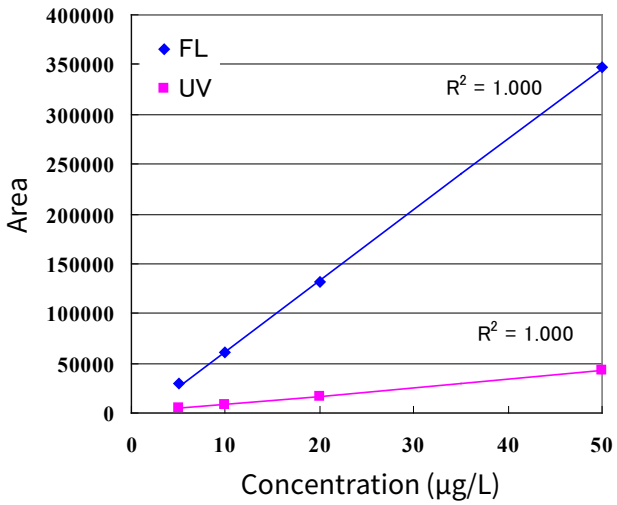
(K.Suzuki)

Example: Measurement of Standard



HPLC conditions

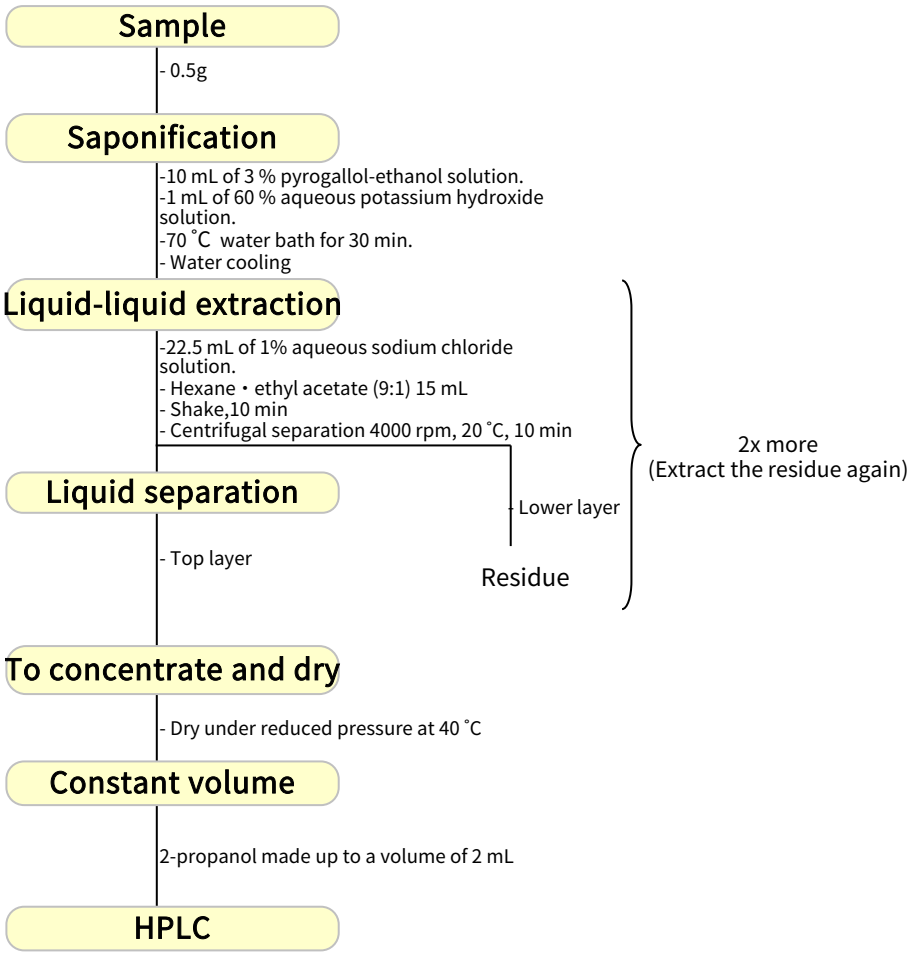
Column	: Inertsil ODS-3 (5 µm, 250 x 4.6 mm I.D.)
Eluent	: A) CH_3OH B) H_2O A/B = 95/5, v/v
Flow rate	: 1.0 mL/min
Column temperature	: 40 ˚C
Detected	: UV 325 nm FL Ex 340 nm Em 460 nm
Injection volume	: 20 µL



Calibration curve for retinol

GL Sciences

Example of pretreatment

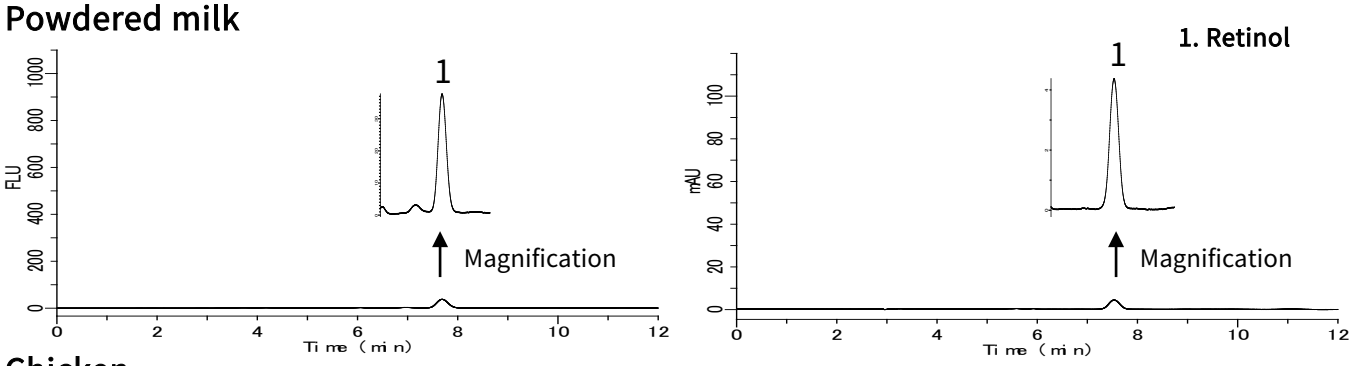


Example: Sample Measurement

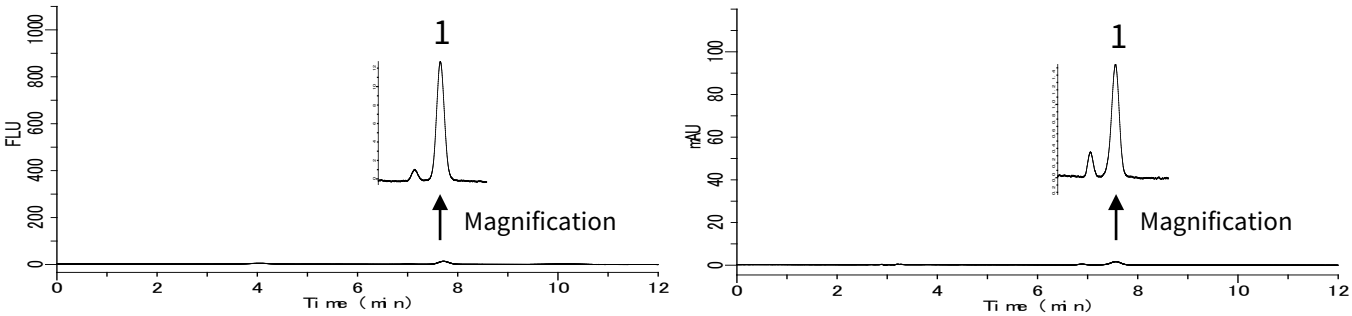
FL

UV

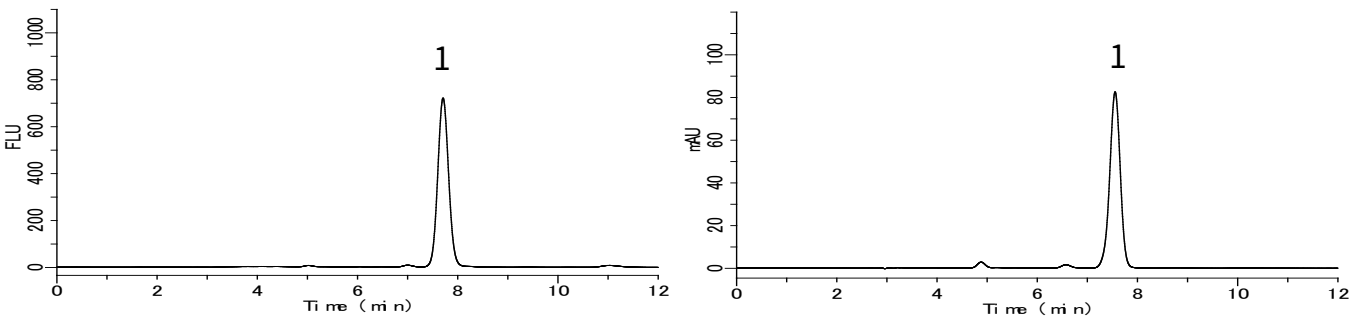
Powdered milk



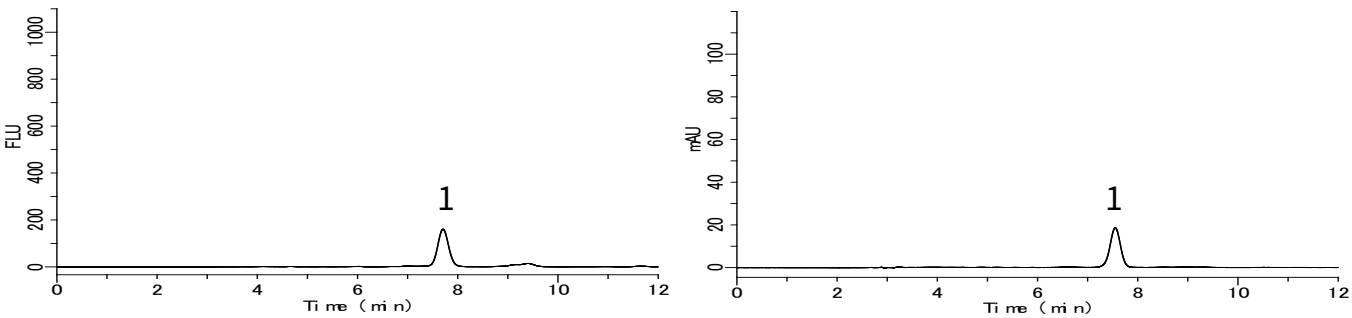
Chicken



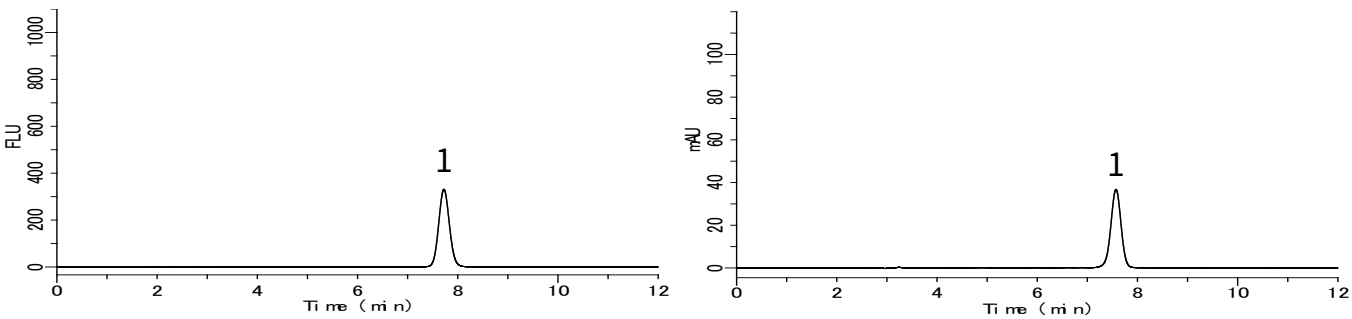
Broiled eel



Butter

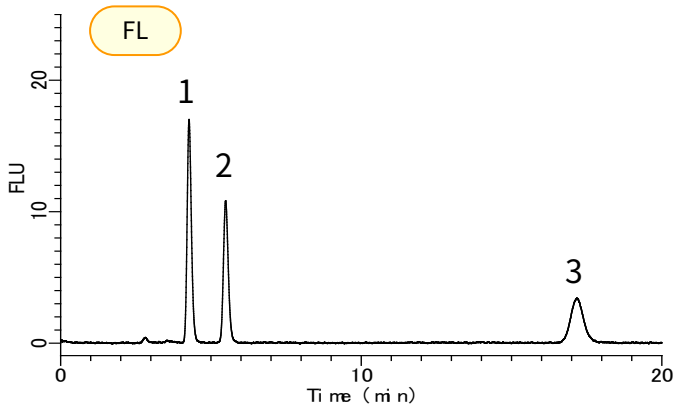


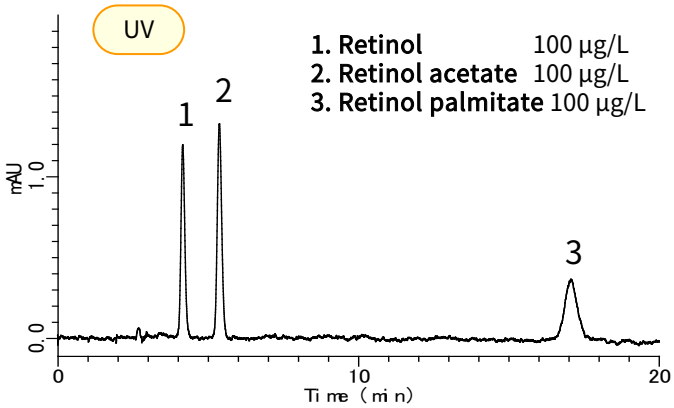
Pork (liver)



Example: Measurement of Standard

It has been reported that the retinol can be separated and detected by extracting and analyzing samples without saponification.





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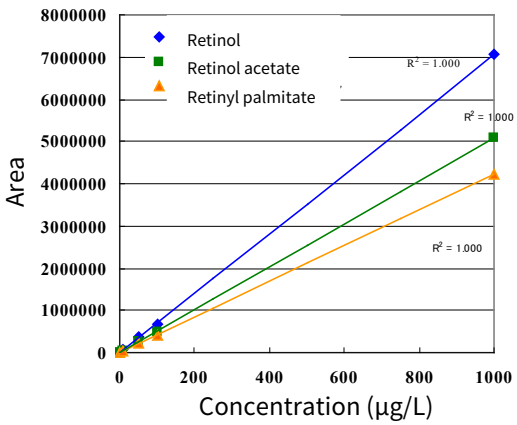
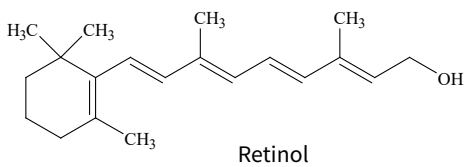
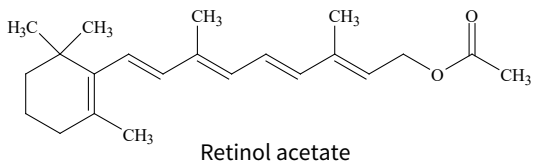


Example of a calibration curve using a fluorescence detector.

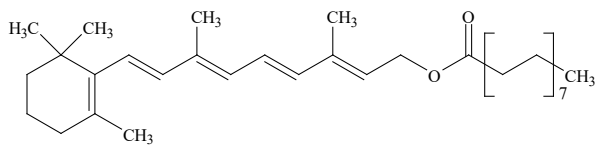
Structural formula



Retinol



Retinol acetate



RETINYL PALMITATE

Structures are created using Chemistry 4-D Draw provided by ChemInnovation Software, Inc.

GL Sciences Inc. Japan
22-1 Nishishinjuku 6-chome
Shinjuku-ku, Tokyo
163-1130, Japan

Phone: +81-3-5323-6620
Fax: +81-3-5323-6621
Email: world@gls.co.jp
Web: www.glsciences.com

GL Sciences Inc. USA
4733 Torrance Blvd. Suite 255
Torrance, CA 90503
USA

Phone: +1-310-265-4424
Fax: +1-310-265-4425
Email: info@glsciencesinc.com
Web: www.glsciencesinc.com

GL Sciences B.V.
Dillenburgstraat 7C
5652AM, Eindhoven
The Netherlands

Phone: +31-40-254-9531
Email: info@glsciences.eu
Web: www.glsciences.eu

GL Sciences (Shanghai) Limited
Tower B, Room 2003
Far East International Plaza
No.317 Xianxia Road, Changning District
Shanghai, China 200051

Phone: +86-21-62782272
Email: contact@glsciences.com.cn
Web: www.glsciences.com.cn

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