EUROPEAN COMMISSION

JOINT RESEARCH CENTRE

Institute for Reference Materials and Measurements

CERTIFIED REFERENCE MATERIAL
BCR® – 122

CERTIFICATE OF ANALYSIS

MARGARINE			
Vitamin	Mass fraction		Number of accepted sets of results p
	Certified value[1] [mg/kg]	Uncertainty [2] [mg/kg]	
D_3 (cholecalciferol)	0.125	0.007	12
E (α-tocopherol)	241	12	9

[1] This value is the unweighted mean of the means of p accepted sets of results obtained by different sample preparation procedures and analytical techniques. The values are traceable to the International System of Units (SI).

[2] The uncertainty is taken as the half-width of the 95 % confidence interval of the mean defined in (1).

This certificate is valid for one year after purchase.

Sales date:

The minimum amount of sample to be used is 10 g for each vitamin.

NOTE

This material has been certified by BCR (Community Bureau of Reference, the former reference materials programme of the European Commission). The certificate has been revised under the responsibility of IRMM.

Brussels, March 1997
Revised: May 2010

Signed: 

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JRC EUROPEAN COMMISSION

DESCRIPTION OF THE SAMPLE

BCR-122 is a canned product and each can contains approximately 200 g of margarine, with a fat content of 82 %.

ANALYTICAL METHOD USED FOR CERTIFICATION

- Normal-phase HPLC with fluorometric detection (α-tocopherol)
- Reverse-phase HPLC with ultra-violet detection (α-tocopherol and cholecalciferol)

A detailed description of the employed methods can be found in the certification report.

PARTICIPANTS

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- Department of Applied Chemistry & Microbiology, University of Helsinki (FI)
- Department of Nutrition, University College, Cork (IE)
- F. Hoffmann La Roche Ltd., Basel (CH)
- IGB Keuringsdienst van Waren, Maastricht (NL)
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- Institut fur Chemie und Biologie (BFE), Stuttgart (DE)
- Institut fur Wirkstoffprufung, Kiel (DE)
- Laboratory of the Government Chemist, Teddington (GB)
- Masterlab, Putten (NL)
- National Food Administration, Uppsala (SE)
- National Food Agency of Denmark, Søborg (DK)
- Schweizerisches Vitaminstitut, Basel (CH)
- TNO Nutrition & Food Research Institute, Zeist (NL)
- VTT Biotechnology and Food Research, Espoo (FI)
- Yiotis S.A., Athens (GR)

SAFETY INFORMATION

The usual laboratory safety measures apply.

INSTRUCTIONS FOR USE

The material is intended to be used for calibration and for performance verification of an analytical method.

1. Cans should be allowed to equilibrate to room temperature before opening. Contents should be used on the day of opening only.
2. Before removing a sample for analysis, the material in the can should be thoroughly mixed.
3. Methods used for the determination of all-trans-retinol and α-tocopherol should include saponification using alcoholic potassium hydroxide solution, followed by solvent extraction and determination by HPLC. The use of suitable antioxidants and nitrogen flushing is strongly advised.
4. Methods for the determination of vitamin D_3 (cholecalciferol) should also include saponification and solvent extraction (as above), and additionally, sample clean-up using normal phase LC should be employed prior to determination by HPLC. The use of an internal standard [vitamin D_2 (ergocalciferol)] and antioxidants are strongly recommended.
5. The stated uncertainty applies when the reference material is used for calibration, or for verifying the validity of a calibration curve. When it is used to assess the performance of an analytical technique, the user may refer to the recommendations in the chapter "Instructions for Use" of the certification report.

Additional material information for vitamin A (all-trans-retinol), its isomer 13-cis-retinol, and for the three vitamin E-isomers β-, γ-, and δ-tocopherol can be found in table 41 of the certification report.

STORAGE

The cans should be kept unopened at temperatures not exceeding - 30 ºC. However, the European Commission cannot be held responsible for changes that happen during storage of the material at the customer's premises, especially of opened samples.

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NOTE

A technical report on the production of BCR-122 is available on the internet (http://www.irmm.jrc.be). A paper copy can be obtained from IRMM on request.

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