

Fig. 1. a Vitamin A retinol standard chromatogram. b Vitamin A chromatogram from cheese extract.

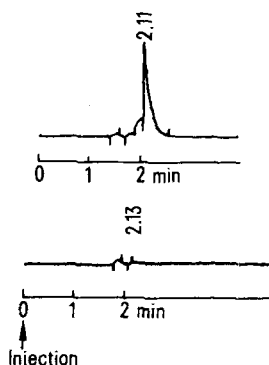


Fig. 2. Vitamin A after a 2-h exposure to daylight.

wavelength of 328 nm between the concentrations of 20 and 120 ng retinol (regression coefficient $r=0.997$) (figure 3). The necessary quantity was 10 g cheese or 40 ml milk. The measurement of the extraction yield was carried out by adding a known quantity of retinol to cheese before saponification (table 2). The yield is $93 \pm 6\%$.

The results of the measurements using the external standard were reproducible within a limit of less than 4%. A fresh standard was prepared for each test series in order to avoid polymerization of the retinol.

The accuracy of the results was demonstrated by measuring vitamin A in the same sample on different days over a period of 1 month. The factors that might have modified the vitamin A content were eliminated. Each measurement was repeated at least 3 times. The standard deviation was 6% in the sample and 3% in the standard.

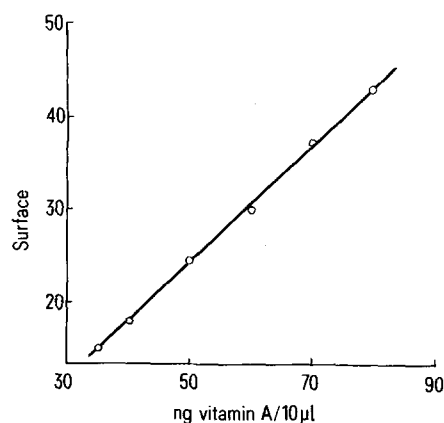


Fig. 3. Linearity of vitamin A content with surface peak area measured with with an UV-photometer.

We have compared the conventional method (Carr-Price reaction) with the HPLC method for milk and cheese samples. There is no statistically significant difference between the 2 types of method (table 3).

After 20 to 30 analyses, it was necessary to recondition the column when the retention time and the pressure exceeded 5% and 40%, respectively. Reconditioning consisted of a column rinse with an acetone solution (H_2O 95:5) for 1 h. We made about 400 analyses before replacing the column. Reverse phase HPLC is applicable to vitamin A retinol.

In conclusion, we have found that the HPLC method is an efficient technique for measuring vitamin A in dairy products that are not enriched with vitamin A. This method is relatively simple, specific, reproducible and rapid. Due to its rapidity, it is particularly interesting for control analyses. It may also be used for complex samples such as tissues, organs or food products. It offers undoubtable advantages over the conventional procedure.

- 1 Acknowledgments. We thank Prof. H. Isliker, Institute of Vitamins, Lausanne, for his hospitality and for making available the necessary working rooms. We also thank Mrs L. Paris for her technical assistance.
- 2 F. H. Carr and E. A. Price, *Biochem. J.* 20, 497 (1926).
- 3 H. R. Bolliger and A. König, in: *Dünnschichtchromatographie*, p. 254. Ed. K. Randerath, Springer, Berlin 1967.
- 4 Th. A. Kouimtzis and I. N. Papadayannis, *Microchim. Acta* 1, 145 (1979).
- 5 R. C. Williams, J. A. Schmit and R. A. Henry, *J. Chromat. Sci.* 10, 494 (1972).
- 6 K. Ranfft and H. Rückemann, *Z. Lebensm. Unters.-Forsch.* 166, 13 (1978).
- 7 T. Van De Weerdhof, M. L. Wiersum and H. Reissenweber, *J. Chromat.* 83, 455 (1973).
- 8 K. Aitzetmüller, J. Pilz and R. Tasche, *Fette, Seifen, Anstrichm.* 1, 40 (1979).

CONGRESSUS

Czechoslovakia

International conference on xenobiochemistry

Bratislava, 9–13 June 1980

The conference is held on 'Biochemistry of metabolism and effect of xenobiotics'. Detailed information by: Prof. A. Jindra, Biochemical Institute, Kalinciekova 8, 88034 Bratislava/CSSR.

Italy

7th international symposium on mass spectrometry in biochemistry, medicine and environmental research

Milan, 16–18 June 1980

For information write to: Dr Alberto Frigerio, Istituto di Ricerche Farmacologiche 'Mario Negri', Via Eritrea, 62, I-20157 Milano/Italy.

USA

13th Miles international symposium

18–20 June 1980

The symposium on 'Nutritional factors: modulating effects on metabolic processes' will be held at Johns Hopkins Medical Institutions. Chairman: R.F. Beers. For further information write to: E.G. Basset, Coordinator, Miles Laboratories, P.O. Box 40, Elkhart, In. 46515/USA.

7th international convocation on immunology

Niagara Falls, New York, 6–10 July 1980

The symposium will cover 'Immunobiology of the major histocompatibility complex'. For information write to Dr James F. Mohn, Director, The Center for Immunology, Room 210 Sherman Hall, State University of New York at Buffalo, Buffalo, N.Y. 14214/USA.

Italy

8th congress of the international primatological society

Florence, 5 July 1980

This symposium will be held on 'Regression of atherosclerosis in nonhuman primates'. Chairman: M. R. Malinov, Oregon Regional Primate Research Center, 505 N.W. 185th Avenue, Beaverton, Oregon 97005/USA.

Switzerland

16th EUCHEM conference on stereochemistry

Bürgenstock, near Lucerne, 27 April–3 May 1980

Information by the chairman: Prof. J.D. Dunitz, Laboratorium für Organische Chemie, ETHZ, Universitätsstrasse 16, CH-8092 Zürich.

First world congress of the international brain research organization (IBRO)

Lausanne, near Geneva, 1–6 April 1982

This congress on 'The brain in health and disease' should bring together neuroscientists and clinical neurologists from all countries to discuss the latest aspects of brain research and its clinical applications.

For information write to the organizers: H. Van der Loos/L.J. Garey, Institute of Anatomy, Rue du Bugnon 9, CH-1011 Lausanne (Switzerland).

3rd international vitellogenin workshop

Kandersteg, near Berne, 7–10 September 1980

Topics: Vitellogenins of vertebrates and invertebrates – Multiplicity and structure of vitellogenin genes – Precursors, processing and stability of vitellogenin mRNAs – Hormone receptors in vitellogenic tissues – In vitro systems. Attendance will be limited to 60 participants. Organizing Committee: Prof. R. Weber, PD G. Ryffel. Information and registration forms are available from: 3rd int. Vitellogenin Workshop, c/o Zoological Institute, Sahlstrasse 8, CH-3012 Bern (Switzerland).

Belgium

3rd international symposium on quantitative mass spectrometry in life sciences

Gent, 10–13 June 1980

Information can be obtained from: Prof. Dr A. De Leenheer, Laboratoria voor Medische Biochemie en voor Klinische Analyse, Rijksuniversiteit Gent, De Pintelaan 135, B-9000 Gent, Belgium.

Instructions to authors

Experientia is published on the 15th of every month and can be obtained in any country through booksellers or from the publishers. All communications to the editors should be addressed to the publishers. All manuscripts for publication in a given number must be in the hands of the editors 3 months before publication.

Articles of general scientific interest, of interdisciplinary character: briefly stated and hitherto unpublished original reports of sufficient novelty value.

Experiments Papers in which animal experiments have been conducted without using the appropriate anaesthesia will not be accepted.

Manuscripts (including all figures and tables) should be submitted in duplicate.

Text should not exceed 2–3 typewritten pages (50–60 lines), 1–2 relevant figures or tables. English summary of maximum 4 lines. Abbreviations should be properly explained. References should be numbered consecutively and be presented on a separate page. Name and address have to be placed directly under the title. Linguistically inadequate manuscripts will be returned. Manuscripts in languages other than English should be supplemented by an English translation of the title. Footnotes should be avoided.

Figures Illustrations should be separate from the text, with the author's name on the back in soft pencil. The desired labelling should be shown on a second set of figures, which will be used as a model for

inscriptions. Drawings for reproductions should be on good paper in Indian ink, photographs should be supplied as glossy positive prints. The illustrations should be at least one and a half times as large as the definitive size desired. Over-large figures can be easily damaged in the mail. Captions should be self-explanatory, without reference to the text.

Tables should be provided with a title and with self-explanatory captions.

Headings In submitting their manuscript to *Experientia*, authors are requested to indicate one of the headings mentioned below, under which they would wish to place their short communication:

1. Mathematics and Physics; 2. Cosmology, Astronautics, Cosmonautics; 3. Mineralogy, Geophysics, Oceanography; 4. Inorganic and Physical Chemistry; 5. Organic Chemistry; 6. Biophysics; 7. Molecular Biology, Cellular Biology; 8. Genetics; 9. Botany; 10. Zoology; 11. Ecology; 12. Biochemistry (analytic and synthetic); 13. Biochemistry (Enzymes, Metabolism); 14. Physiology; 15. Neurology; 16. Pharmacology, Toxicology, Pathology; 17. Experimental Gerontology; 18. Anatomy, Histology, Cytology, Histochemistry; 19. Embryology; 20. Endocrinology; 21. Circulation, Cardiology, Angiology; 22. Nutrition, Gastroenterology; 23. Hematology, Serology; 24. Immunology, Allergy; 25. Microbiology, Parasitology, Chemical Therapeutics; 26. Oncology, Carcinology, Cytostatics; 27. Radiology.

Reprints The authors receive 50 reprints, without cover, free of charge. Price-list for further reprints is available.