The samples were purchased in connection with the long-term selenium monitoring programme and have been freeze-dried and stored vacuum packed at +4°C. The samples of bovine liver were obtained from 16 retail food stores in the Helsinki area and the samples of porcine liver from a communal slaughter house. The samples were combined into four pooled samples per sampling period. The samples were analyzed by electrothermal atomic absorption spectrometry.

In the period 1982–1995 the mean Cd level of bovine liver was 0.17 mg/kg DM and of porcine liver 0.07 mg/kg DM. Cd contents varied between 0.02–0.49 and 0.02–0.21 mg/kg DM respectively. No significant trends were observed during this period. On the whole the concentrations were lower than those reported in the 1970s.

*To whom correspondence should be addressed.

Microwave acid digestion for the determination of mercury in foodstuffs by CVAAS. Jari Toivo* & Merja Eurola.

University of Helsinki, Department of Applied Chemistry and Microbiology, Post Box 27, Viikki-D, University of Helsinki, FIN-00014, Finland.

The objective of this study was to develop a microwave acid digestion technique prior to an amalgamation cold vapor atomic absorption spectrometric (CVAAS) detection method for the determination of total mercury in different food matrices.

Microwave acid sample digestion was carried out in sealed vessels. The heating time, acid volume and type were varied to determine the optimal conditions for decomposition. In the CVAAS method an amalgamation technique and tin (II) chloride reduction were used.

The proposed procedure for the decomposition of dried samples was to heat a 200 mg sample for 1.5 min. (power 600 W) in 3.5 ml HNO_3. The results of the certified samples were in good agreement with the certified values. The precision of the proposed method was good (RSD < 5%). Microwave heating of 3.0 min in 5.0 ml HNO_3 was needed to yield satisfactory recoveries for very fat and protein-rich non-dried sample materials. The limit of detection was 5.2 ng/L in analytical conditions used.

Using microwave acid sample digestion combined with an amalgam-CVAAS-detection the total mercury can be determined accurately, precisely and very rapidly in food samples. However, the decomposition conditions required strongly depend on the sample matrix.

*To whom correspondence should be addressed.

Factors influencing the determination of folate in foods. Caroline Martin,* Louise O'Mahony & Tony Sheehy.

Department of Nutrition, University College, Cork, Ireland.

Many factors can influence the determination of food folate concentrations. The objective of this study was to investigate the thermal and pH-stability of folates, the influence of conjugase type on polyglutamate deconjugation, and the implications of the choice of calibrant used in the microbiological assay. The thermal stability of folic acid (FA), folinic acid (5 CHO THFA), 5-methyl tetrahydrofolic acid (5CH3 THFA), 7,8-dihydrofolic acid (DHFA) and 5, 6, 7, 8 tetrahydrofolic acid (THFA) was determined using a Cary 1E UV-visible wavelength spectrophotometer. Solutions (approximately 10–100 nm) were incubated in a universal buffer (ph 4,5 to 9,0) at 37°C and 70°C for 4 h. After 4 h at 37°C, concentrations of all folates were > 80% of initial values. Increasing the incubation temperature to 70°C reduced the concentrations of FA and 5-CHO THFA slightly at pH 4,5–6,0. At this temperature, 5-CH3 THFA, DHFA and THFA were extremely unstable above pH 7,0. After 4 h, concentrations were < 30% of their initial values. Free and polyglutamyl folate concentrations measured in a variety of foods differed significantly depending on whether human plasma, chicken pancreas or hog kidney conjugase was used for polyglutamate deconjugation. The growth response of *Lactobacillus rhamnosus* (ATCC 7469) to 5-CHO THFA, 5-CH3 THFA, DHFA and THFA at concentrations typical of those used in the microbiological assay (0–1,4 ng/4 ml medium) was 58.2, 43.6, 26.1 and 14.9% respectively, of the response to FA. This represents a serious limitation of the microbiological assay when samples contain complex mixtures of folates. In conclusion, careful optimization of extraction pH, temperature and time, conjugase type and method of standard curve calibration are needed to generate reliable food folate data.

*To whom correspondence should be addressed.

Determination of carotenoids in fruits and vegetables by LC. Erik J. M. Konings* & Harry H. S. Roomans.

Inspectorate for Health Protection, Food Inspection Service, PO Box 2516, 6201 GA Maastricht, The Netherlands.

In many epidemiologic studies, an increased intake of fruits and vegetables was associated with a reduced risk of lung and other cancers. We elaborated a method for the determination of lutein, zeaxanthin, α-carotene, β-carotene, β-cryptoxanthin and lycopene in fruits and vegetables.

After extraction carotenoids were dissolved and a fraction was injected onto the LC-system.

The isocratic LC-system consisted of a Vydac column. Carotenoids were detected using a diode array detector, and quantified by means of the internal standard method. Carotenoids in the saponified mixture were calculated against a mixed standard solution which also was saponified.

The separation of the individual carotenoids on the analytical system was satisfactory. The interference of other components was small. A considerable amount (40%) of lycopene was destroyed by hastalloy-frits.