This comparison is simply an example of a small practical experiment. Many people consider that comparisons like these must always be performed on dry matter basis. But on the other hand, a very practical method of calculating recipes on wet weight with standard NLG factors is needed.

The NLG work is described in The National Food Administration report series, Rapport 32/94.

Comparison of calculated and analyzed values: antioxidant and fatty acid composition. L. Valsta,[a,b] M. Heinonen,[c] M. Anttolainen[a,b]* & M. Mutanen.[c]

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Most often the nutrient composition of a diet is calculated from food composition tables containing data from miscellanious sources. This can cause considerable variation in the results. Recently, new data based on food composition analyses of carotenoids, retinoids, tocopherols, tocotrienols and fatty acids in Finnish foods has been produced. To evaluate the differences in antioxidant and fatty acid data obtained by different methods, the compositions of three Finnish diets differing in their fat quality were estimated by calculation and by analyzing double-portions of the diets.

The diets were a saturated fat diet (milk fat, MF), a monounsaturated fat diet (rapeseed oil and margarine, RO), and a polyunsaturated fat diet (sunflower oil and margarine, SO). The diets contained the foods of 14–25 days' menus.

The analyzed values of the antioxidants and fatty acids were in general about 90% of the calculated values with some exceptions: The analyzed beta-carotene and retinol values of the oil diets (RO and SO) were only around 50–60% of the calculated values. The analyzed gamma-tocopherol contents for MF and SO diets were 120–180% of the calculated contents, but only 90% in case of the RO diet. The analyzed gamma-tocotrienol and delta-tocopherol values were about 2–8-fold compared to the calculated values.

The analyzed values of saturated fatty acids were 85–113%, monounsaturated fatty acids 65–89%, and polyunsaturated fatty acids 83-99% of the calculated values.

The reasons for the differences found between analyzed and calculated diet composition can be explained by: real differences in food composition (time, cultivar etc.), different enrichment procedures of margarines, food preparation losses, different analytical methods used, processing of the double portion sample, and possible inaccuracies, when nutrients present in small concentrations are analyzed.

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Freezing effect on carotenoid content in raw and cooked vegetables and fruits. B. Olmedilla,* F. Granado, E. Gil-Martinez & I. Blanco.

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Our aim was to evaluate one of the factors, freezing, that can modify the value of individual carotenoids content in foods and even the bioavailability of these compounds. With this study we try to improve the information available in the Food Composition Table/Database and used in dietary assessment and large scale surveys.

The effect of freezing/thawing (at –20°C for 1 month under nitrogen atmosphere/16 h at 4°C and protected from light) was evaluated under two circumstances: before the analysis of the sample (situation frequent in many laboratories), as well as after being cooked for consumption (situation very common in households).

Several vegetables (green celery, white celery, tomato paste, leek and peas) and fruits (tangerine, medlar, green plum, avocado) were purchased in the market seasons and used for this study. Lutein, zeaxanthin, lycopene, β-carotene, a-carotene and β-cryptoxanthin content were determined by a validated HPLC method (Olmedilla *et al.*, 1990; Granado *et al.*, 1992), under different conditions of the sample: raw, raw-frozen, cooked and cooked-frozen.

The effect of freezing and thawing on individual carotenoid content, isomerization degree and biological activity is discussed, in the light of the presence of clorophylls and/ or carotenoid esters.

This work has been partially performed under the AIR2-CT93-0888 contract of the European Union (DGXII).

Olmedilla *et al. J. Liq. Chromatog.*, **13**(8), 1455–83 (1990).
Granado *et al.*, *J. Agric. Food Chem.*, **40**, 2135–40 (1992).

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Carotendoids: new data needed in The Netherlands nutrient databank (NEVO). Corine J.M. Beemster, Karin F. A. M. Hulshof* & Susanne Westenbrink.

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In recent epidemiological studies positive health effects of some natural anti-oxidants has been observed. From this point of view there is an increasing interest in accurate data on several anti-oxidants, for instance carotenoids (such as β-carotene, lycopene and lutein).

In the Netherlands, data of the Dutch National Food Consumption Surveys carried out in 1987/88 and 1992 provide information on food consumption (2-day record), life-style and background variables. The data of the DNFCS can be converted into energy and nutrients using the Netherlands Food Nutrient Databank.

The databank currently provides only information on retinol equivalents of foods, not on individual carotenoids. However, within the framework of the so-called total diet studies, analytical data of the content of carotenoids and β-carotene of about 200 food items (determined by calorimetry and HPLC, respectively) have recently become available. To assess the intake of β-carotene in the Netherlands, efforts have been made to collect information on the content of β-carotene in about 1100 products. For this purpose, data from the Dutch total diet study, as well as data from food composition tables, were used. Comparing several sources, substantial differences wee found for the same products. In conclusion, for a number of crucial food items in the Netherlands there is a need for more analytical data regarding carotenoids and β-carotene.

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Sources of variability in the intercomparison of food cartenoid content data. F. Granado, B. Olmedilla,* I. Blanco & E. Rojas-Hidalgo.

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As part of a European Union Project (AAIR), we have compiled data on carotenoid in vegetables and fruits (more than 80 items) reported/analyzed in four European countries (United Kingdom, Netherlands, Finland and Spain), in order to develop a Database to compute carotenoid intakes as well as a food frequency questionnaire to be applied on dietary assessment surveys and epidemiological studies.

From this evaluation, we have observed the lack of important information, in some cases very easy to provide, that can alter both the data quality in the Food Composition Tables and outcomes of studies using these data.

We will show examples of some major sources of variability regarding:

- —those variables provided together with analytical data,
- —those variables that, although known by the authors, have not been reported (i.e. ripeness degree, moisture).

Variability factors associated with sampling, sampling handling, analytical procedures, data reports, etc., have already been pointed out by other authors. In addition, there are still few carotenoid data on prepared vegetables as consumed, and cooking methods seem to be poorly described. Major sources of variability should always be reported which include scientific name, variety, moisture, ripeness degree, seasonality, edible part of the plant, edible portion, sample size for cooking and type, time and temperature of cooking.

This work has been partially performed under the AIR2-CT93-0888 contract of the European Union (DGXII).

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Study on the nutrient composition of hydroponic water dropwort (*Oenanthe stolonifera* DC). Y. J. Park & Y. O. Kim.

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Water dropwort (*Oenanthe stolonifera* DC) is used for various cooked vegetable dishes and Kimchi, a fermented vegetable preservation, in Korea and is therefore an important vegetable of the Korean diet. Interest in water dropwort grown in hydroponic condition has arisen because of the possible use as fresh material for salad and green leaves juices. This study was conducted to investigate the nutrient composition of hydroponic water dropwort and the effect of blanching condition on ascorbic acid content. Nutrient compositon of hydroponic water dropwort was measured in three portions of stems, petioles and leaves. Hydroponic water dropwort were obtained from the department of Horticultural Science, Seoul National University on the day of the experiments. The results were as follows. The nutrient contents of leaves were significantly higher in ash and ascorbic acid and lower in moisture, crude fat and crude fiber than those of stems and petioles. Especially, ascorbic acid content of leaves was 57 ± 0.05 mg/100 g. There was no significant difference in total vitamin A and thiamin contents among three portions. The results of nutrient composition analysis suggest that the leaves of hydroponic water dropwort are important in ascorbic acid and ash. It is recommended that shorter blanching time and addition of 0.5% NaCl to the blanching water are better for the higher ascorbic acid retention of hydroponic water dropwort. In conclusion, as hydroponic water dropwort has high content in vitamin, mineral and free sugar with its alkalinity, leaves as well as stems and petioles of fresh hydroponic water dropwort can be recommended for salad and fresh vegetable juices.

Nutrient composition and nutritional importance of wild gathered foods in an agricultural district in southern Mali. M. B. Nordeide,[a]* M. Følling,[b] E. Lied,[c] A. Hatløy[a] & A. Oshaug.[a]

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This project focuses on gathered foods in an area with surplus food production. Methods included nutrition survey with identification of wild foods plant and their nutrient analysis. Malian diets are based on staple foods (millet, sorghum, yellow mais, rice, wheat) and sauces with different ingredients according to seasons. Gathered foods such as leaves, seeds and fruits are used in sauces, fruits are also used in between meals and roots