

## EUROFOODS UPDATE

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Significant advances towards the goals of EUROFOODS have been made in its first year of existence. This presentation is a brief glimpse of the state of affairs including recent progress and current plans, and a sneak preview of an upcoming EUROFOODS meeting in Norwich, United Kingdom in August 1985 hosted by Dr. D.A.T. Southgate and the Food Research Institute.

### WHAT IS EUROFOODS?

EUROFOODS is an organization of individuals and institutes throughout Europe involved in dietary assessment, analysis, distribution, or use of food composition information. A common goal of all involved is to improve the compatibility of European food composition tables and of studies relating diet to disease. Seventeen countries are actively represented currently, including the Scandinavian countries, the Mediterranean, Central and Eastern Europe.

The executive committee consists of five individuals, Dr. Ostrowski (France), Dr. West (Netherlands), Ms. Bergström (Sweden), Dr. Southgate (United Kingdom) and the author (FRG). Currently five working groups exist, addressing the following topics: Nutrient losses and gains, and missing values, analytic laboratory exchanges, inventorization of data base producers and users, tourist food tables and computer issues. The activities of each will be further detailed below.

## THE WORKING GROUPS

The committee on nutrient losses and gains has formulated a proposal to collect and computerize information on nutrient changes during preparation in a data base which can be referenced widely to obtain information on changes by cooking method, food and food group or nutrient. Additionally, collection of formulas for calculation and comparisons of calculated changes as compared with measurements in different countries are being undertaken.

Missing nutrient information from various European tables is being collected and categorized for 100 commonly eaten foods to determine the availability of and type of values in the published tables for various nutrients. The classification scheme of Greenfield and Southgate ( 1 ) is being adopted with separate definitions of analysed, calculated, imputed, or borrowed values or combination of values, represented as missing or simply absent in the tables. This exercise, which reveals the extent to which certain tables borrow the majority of their values (and often from other countries) is reported on in the proceedings ( 2 ).

The committee on analytic laboratory comparisons has organized an inter-laboratory trial in which 6 foods were distributed to 20 recognized national food laboratories. Protein, fat, available carbohydrates, dietary fiber and ash were measured by each lab's own routine method; moisture by the prescribed standard method. These results, indicating large inter-laboratory differences, particularly for fat measurements, will be presented in Norwich, and also reported on in the proceedings ( 2 ).

Inventorization of the data bases existing in 15 countries was begun in 1982 and is presented in the report "EUROFOODS: Towards compatibility of Nutrient Data Banks in Europe" ( 3 ). At that time 32 groups reported having systems with 21-3000 food entries and 4-120 food components. This

effort is being updated, and a guide to the available food tables, their publishers and prices; as well as the existing (prominent) nutrient data bases in Europe is being composed.

The tables for tourists is foreseen to include useful information on nutrients of known health importance in general nutritional guidelines as well as those of critical importance to specific risk groups (hypertonics , hyperlipidemics, lactose intolerant individuals and diabetics) . Progress on this front depends on further development in the area of translation, recipe exchange and harmonization of the nutrient data bases.

The computer committee has received financial support from the European Community to develop a common coding system, identifying the dissimilarities between tables and test the feasibility of developing a common European nutrient data base, including the maintenance of such a system, and its distribution. Two workshops have been held on these topics; in Luxembourg and in Heidelberg, with representatives of 17 countries participating. The German Federal Health Office (Bundesgesundheitsamt) has volunteered to assist in the development of the common coding system, through the committee on dietary assessment.

To date, translations of the native language entries of 15 European tables have been computerized in Heidelberg. They are presented in Table 1. This has been difficult and does not solve the problem of foreign table use. Seldom as they may be consulted, introductions are also important keys to responsible application of food tables. Translations of these for 15 major European tables have been compiled (see Table 1) and will be distributed through EUROFOODS. Common recipes are also being collected and stored from many countries. Comparisons of the format of 16 different tables have been undertaken, and the units of measure, conversion factors, and modes of expression have been collated. A sample of the printout for vitamins and their units/100 g as found in a booklet constructed for comparative use can be found in Table 2. The complete comparison of table contents can be acquired from EUROFOODS.

The merger of the complete tables including names, translations and nutrient information from Holland, the United Kingdom, the Federal Republic of Germany, Finland and Sweden is underway.

## EUROCODE

First steps in the development of a widely acceptable EUROCODE have been made this year through development, circulation and discarding of successive drafts. Agreement on the main food groups was achieved at a EUROFOOD coding workshop in Heidelberg in February, and the result can be seen in Table 3. It has already been proven useful in comparisons of the distribution of foods in 10 tables.

The current design for a coding and descriptor system as proposed by the commission on dietary assessment of the German Federal Health Office involves 2 independent codes and standard variables for supplemental description of foods as seen in Diagram 1. Code one will be an unstructured sequential numbering of all foods available in Europe. Code two is a semi-hierarchical, semi-informative code involving 3 to 4 fields of information for use in cross referencing food groups between countries and bypassing the translational problems. It is hoped that this will be standardly used in future national food tables. Code three will be an agreed upon set of information necessary to completely describe food or dishes for nutritional use - similar in concept to the factored food vocabularies of the Food and Drug Administration.

The greatest amount of effort has gone until now into development of code 2 under the following premises listed in Table 4. It is meant primarily for coding by basic food group and cross referencing tables. A sample printout of food table entries for the group apple as identified by this code can be found in Table 5.

Early on it became apparent that although there was tremendous enthusiasm and willingness to cooperate within Europe on some standardized coding system, many different expectations were held by different groups - some wanted a system for collection and evaluation for surveys, others for computing, still others for identifying of foods. One simple code and data base could not serve all purposes well and led to the current conception of an "entire" nutrient system. The computer committee of EUROFOODS envisions various components allowing for multiple uses, in answering such questions as when one can consider two foods from different sources identical. The answer depends on the purpose of the user, but the necessary information should be available through the coding and descriptor system. The EUROFOOD concept of information and software program needed to conduct nutrient analyses and use foreign tables responsibly are presented in Diagram 2.

Not only information but programs for various purposes are also needed, as well as guidelines for use. Information files, including nutrient analyses related information (on sample, method, laboratory, recipe information related to mixed foods, descriptive information on handling, processing, part of plant or animal, and the like) are required for identification and comparison and language files with scientific and native names as well as local synonyms.

### Conclusion

The author's interest in these efforts is in terms of the potential for better understanding the relationships between diet and disease through international epidemiology. There is still much to be learned about the risk differentials for diseases between countries which can better help us understand what we are doing right and what wrong in food offerings and food selection. And there are still many problems impeding studies of diet and nutrient intakes between countries. Many EUROFOOD projects are directed at improving this situation. I would like to conclude by reporting that in this effort a usually high level of willingness to collaborate within Europe has been demonstrated which has made the rapid and exciting results already achieved possible.

## Literature

1. Greenfield H, Southgate DAT. Guidelines for the preparation of food composition tables (in press)
2. Proceedings of the Second EUROFOODS general meeting, August 25-28, 1985, Norwich, England (in press)
3. EUROFOODS: Towards Compatibility of Nutrient Data Banks in Europe. Ann Nutr Metab 29/S1/85, Karger, Basel 1985

TABLE 1.  
MAJOR EUROPEAN FOOD TABLES :  
TRANSLATION TO ENGLISH

### Foods Introduction

*		DENMARK	Moller
*	*	FED.REP. GERMANY	Souci/Fachmann/Kraut
	*	FINLAND	Koivistoinen
	*		Turpeinen
*	*		Varo
*	*	FRANCE	Ostrowski/Josse
	*		Randoin et al.
*	*		Renaud et al.
*	*	GERMAN DEM. REP.	Haenel
*	*	GREECE	Trichopoulou
*	*	ITALY	Carnovale/Miuccio
			Fidanza/Versiglione
*	*	NORWAY	The National Nutrition Council
*	*	POLAND	Piekarska/Los-Kuczera
*	*	PORTUGAL	Gonsalves Ferreira/da Silva Graca
*		SPAIN	Arias/Moreiras-Varela/Extremera
*	*	SWEDEN	Statens Livsmedelsverk
*		THE NETHERLANDS	UCV-Kommissie
*	*	UNITED KINGDOM	Paul/Southgate

**Table 2 PRESENTATION OF VITAMINS IN VARIOUS EUROPEAN FOOD TABLES**

	Vitamin A	Retinol	Retinol-equiv.	Carotene	total Carotinoids	active carotene Provit. A	$\beta$ -carotene	Vitamin D	Vitamin E	$\alpha$ -tocopherol	$\alpha$ -tocopherol equiv.	Vitamin K
Austria	Foreign tables in use											
Belgium	ER <sup>†</sup>											
Denmark		ug	ug				ug	ug		mg	mg	KI ur/
FRG	mg			mg	mg			ug	mg			
Finl. Varo												
Turp.			ug									
Koiv.												
France: Ostr.		mg						mg	mg			
Randoin	mg					mg		mg	mg			
Renaud	mg					mg		mg	mg			
GDR		mg					mg	mg	mg			
Greece												
Ireland	Foreign tables in use											
Italy: Carn.			ug									
Fidanza		ug	ug	ug								
Norway	IU											
Poland		ug	ug	ug								
Portugal	IU			ug								
Spain			ug					ug				
Sweden:												
1. Skolupplage		mg	mg			mg		ug	mg			
2. Large tab.		mg/ kg	mg/ kg			mg/ kg		ug/ kg	mg/ kg	mg/ kg		
The Netherl.		mg										
UK		ug		ug				ug	mg			

<sup>†</sup> 1 ER = 1 ug Retinol = 6 ug  $\beta$ -carotene

**Table 3: EUROCODE MAIN FOOD GROUPS**

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1. Milk + products, mixed foods incl. dishes
2. Eggs + products, mixed foods incl. dishes
3. Meat + products, mixed foods incl. dishes
4. Poultry, game birds, game + products, mixed foods incl. dishes
5. Fish, molluscs, reptiles, crustaceans + products, mixed food incl. dishes  
incl. dishes
6. Oils and fats + products, mixed foods and dishes
7. Grain + products, mixed foods incl. dishes
8. Pulses, seeds, nuts, kernels + products, mixed food incl. dishes
9. Vegetables + products, mixed foods incl. dishes
10. Fruits, -products, -mixed foods incl. -dishes
11. Sugar and sugar products
12. Beverages (except milk)
13. Miscellaneous, soups, sauces
14. Food for special nutritional use

**Table 4: PREMISES FOR EUROCODE 2**

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a practical code for intake assessment and table cross references

1. Incorporating mixed foods integrally with natural foods or unprocessed foods (because the intake form is regularly as a mixture and many hypothesis are directed at the food as consumed).
2. A system in which the foods are easy located. A system whose usage does not require practical food knowledge (so that no extensive training in use is needed).
3. A code in which no detail in food identifying information reported by the subject is disgarded or aggregated (even if nutrient compositorial data is not yet available).
4. A brief numeric code for each food (since alphanumeric systems show preference for a single language).
5. A system with only one code per food or dish.  
(The advantage for the coder is that there is no need of decision which one is which. An alphabetical index list will help with the problem of locating foods.)
6. A food group oriented system to enable international food comparisons.
7. A code open for new developments in the food field as well for new industrial products as for new botanical and zoological hybrides.

Table 5: NUTRIENT VALUES FOR THE SAME FOODS FROM 4 DIFFERENT TABLES

EUROCODE	Foodname	Land	Sodium Na mg/100 g	Potassium K mg/100 g	Magnesium Mg mg/100 g	Calcium Ca mg/100 g
10.303.0	Apples	Netherlands	2.0	150	.	10.0
10.303.0	Apple	Finland	0.8	140	6.0	7.0
10.303.0	Apple	Sweden	1.0	110	8.0	7.0
10.303.0	Apple	FRG	3.0	144	6.4	7.1
10.303.1	Apple unpeeled	Netherl.	3.0	279	.	10.0
10.303.1	Apple dehydrate water : 2.5 %	Sweden	7.0	730	22.0	40.0
10.303.2	Apples dried water : 24 %	Sweden	5.0	569	22.0	31.0
10.303.1	Apple sauce - can or glass -	Netherl.	9.0	130	.	5.0
10.303.1	Apple purree canned	FRG	2.7	114	9.8	4.4

Diagram 1: EUROCODE SYSTEM DESIGN

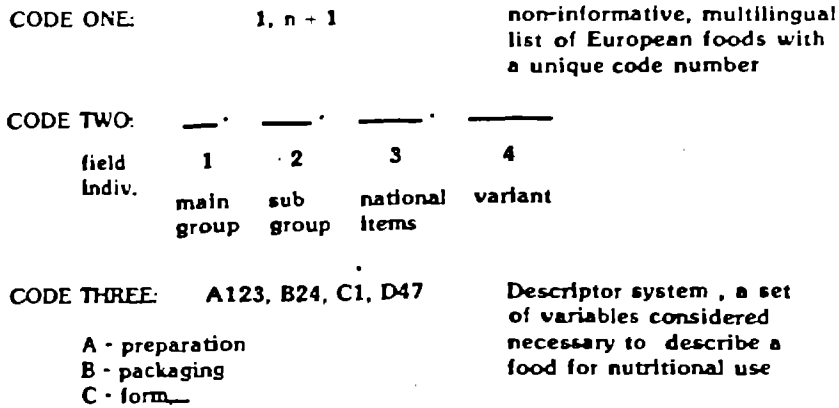


Diagram 2  
Components of an extensive Dietary Assessment System

