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INFOODS UPDATE -- ONE YEAR OF ACTIVITY

I. Organization of INFOODS

About two and a half years ago, a very diverse, international group gathered to discuss the status and problems of food composition data and to see what should and could be done. This meeting followed a number of preliminary meetings and consultations with people closely involved with food composition data -- with their generation, collection, compilation, and usage. Present at the meeting were representatives of various agencies of the US government, of FAO, WHO, and UNU from the United Nations system, and individuals from IUNS and IUFOST.

It was the consensus of the meeting that the state of food composition data left much to be desired, that the situation was getting steadily worse, and that it was imperative that efforts be started to improve the situation. Moreover, it was felt that these efforts had to be on an international level, and that they needed to address the underlying problems in a unified manner rather than just documenting the status and dealing with the symptoms one by one.

The meeting called for the organization of the International Network of Food Data Systems, INFOODS, as a global collaboration of people and organizations interested both in food composition data themselves, and in working to improve food composition data. The overall mandate for INFOODS was that it work toward improving the amount, quality, and availability of food composition data. The next year and a half was spent developing a plan for how to do this, and the successful search for funding. Our funding currently comes mainly from the US government, with the National Cancer Institute taking the role of lead agency with additional support from USDA, FDA, and NHLBI, and

also funds from private foundations and industry. Additionally, the United Nations University provides support and serves as the lead agency within the United Nations System. Work began in earnest in July of 1984 with the establishment of an INFOODS secretariat at MIT.

II. Problems and Needs

Before detailing just what INFOODS is and hopes to become, I would like to sketch some of the specific problems that called it into being. The major problem most obvious to a potential user of food composition data is not being able to find data: not finding the level of selenium in a potato, the amount of protein in a pot roast, or anything much about chicken curry. If you look in the most obvious place, the USDA Handbook No. 8, you will not find these data.

In situations like this, there are three general options:

First, you can analyze the specific foods of interest for the desired nutrient(s), actually preparing the curry and analyzing it.

Second, you can look in the literature or in other tables or databases for the data, e.g., the German tables, Souce, Fachman, and Kraut, does have the selenium content of potatoes, and the second supplement to McCance and Widdowson has chicken curry.

Your third option is that you can use what data you have to make an intelligent estimation of the value (you can impute the data), e.g., Handbook No. 8 has lots of different cuts of beef, you need only choose one, and figure out what cooking does to the protein (on a per 100g basis) and you have what you want for a pot roast entry.

Each of these options illustrates different aspects of some of the general difficulties inherent in the current status of food composition data.

(1) If you choose the straightforward option of direct analysis you must decide

- how to choose and prepare the food - what, precisely, is chicken curry?
- how to conduct the analytic procedure - how do you analyze for selenium?
- how to summarize the results - is the average of all the samples analyzed sufficient?, should it be weighed?
- how to make the results available to others - do you leave them buried in your lab books?

(2) If you choose to look for the data elsewhere you face the problems of

- where to look for the tables,
- how to identify the food - is their curry yours? or their potato?
- how to interpret the values - some tables give only a range,
- how to judge the values - did they do the work carefully?

(3) If you choose the third, to 'impute' the data, you face the decisions of

- how to actually do it,
- how to assess how well it was done,
- how to tell someone what you've done.

While each user knows how to do some of the above, very few can do all, and many would do things differently. What is obvious is that the lack of readily available, high-quality data is really symptomatic of a number of underlying problems:

- too many foods,
- foods are inherently quite variable,

- too many nutrients and biologically active components of foods,
- too few easy, accurate, inexpensive analytic methods,
- too little documentation of what has been done,
- too few widely accepted standard and guidelines for how food composition data should be gathered, saved, or even used, and
- too little communication between workers in the field.

III. The tasks of INFOODS

It was to find ways to deal with these problems that INFOODS was organized. It was felt that the best approach was to focus on linking existing food composition data and in so doing set up an environment for their general improvement. Thus the fundamental intention of INFOODS is to create a loose, international collaboration of the generators, compilers and users of food composition data, and to develop channels of communication and guidelines for operation. Structurally, INFOODS is coordinated by a small secretariat which works with regional groups which, in turn, interact with individuals and groups within their own regions and with other regional groups (Figure 2). To accomplish this, INFOODS is in the process of setting up two networks:

- First is a network of people interested in food composition data, linking them together and drawing upon their expertise. The goal here is to develop a sense of unity in the field and to increase awareness of the importance and limitations of the data, and to keep everyone informed of what is being done.

- Second is a data network, a linkage of food composition data around the world, set up so that anyone can find just what data exist, where they are, and get them, and know just what it is they have gotten.

Considerable machinery is needed to make and keep these networks operational; thus INFOODS has initiated a number of activities (see Figure 2).

-- Development of a standardized terminology and nomenclature. Stewart Truswell, a nutritionist at the University of Sydney, Australia, is leading a group which is examining the problems of international nomenclature and classification. Several meetings have been held, leading to a preliminary design of a terminology which will permit international exchange of food composition data. This system is conceptually similar to the Factored Food Vocabulary of the FDA and builds to a certain extent on the work and experiences of the International Network of Feed Information Centers (INFIC). We expect to have detailed prospectus of this ready for review in September; we are planning an international coding meeting early next year to "try it out," and we hope to have a solid, preliminary version of the whole thing to present to you by this time next year.

-- Development of standards and guidelines for how food composition data should be collected. Dr. David Southgate, a British chemist who produced a brief manual of food data collection in 1974, has undertaken the complete revision and extensive expansion of this document. A first draft has been formally reviewed. The IUNS meeting in Brighton next month will feature a workshop on a second draft which will also be widely distributed for review. A final draft is expected by the end of this year, and I hope to present it to this group in detail at next year's meeting.

-- Exploration of how modern information systems ideas and technology can be involved with the whole field of food composition data. The working group in this area is being set up and chaired by Dr. John Klensin, a computer scientist at MIT. Initial tasks of this group include development of standards for data interchange and design of prototypical regional centers. Additionally, this group will develop computational routines that embody the recommendations about terminology, data quality, and interchange, and facilitate electronic communication among workers in the field. This activity

is central to the whole concept of a network of food composition data. As part of this, this group expects to be able to recommend and provide technical assistance for end-user systems development. By next year, we hope to present you with firm versions of interchange protocols and specifications for regional centers and programs.

-- The production of an international directory of existing data bases. FAO produced, in 1975, an international inventory of food composition tables. Since they currently have no plans for updating this valuable document, INFOODS is preparing an expanded and updated version; a preliminary version is available and being circulated. This will complement the work of Loretta Hoover, who, in the context of this conference, produces an annual inventory of the data that exist within the United States.

-- Regional INFOODS liaison groups. Within the industrialized world there already exists some, although not good, communication between people involved with food composition data. Outside those parts of the world communication between such individuals is very limited. INFOODS is working to link, foster, and even organize where necessary, regional groups which are involved with food composition data. These groups aid INFOODS in determining regional needs and resources; they coordinate regional activities such as workshops and seminars, and in some cases with with INFOODS to establish and maintain regional computer centers for food composition data. We currently have strong links to groups in Scandinavia (NORFOODS, centered in Uppsala, Sweden), Europe (EUROFOODS, centered in Wageningen in the Netherlands), and in the countries bordering the Mediterranean (MEDIFOODS, based in Italy). We are organizing groups in Asia (ASIAFOODS, based in Bangkok), Latin America (LATINFOODS at INCAP in Guatemala), and the US and Canada (NOAFOODS). Other regional groups are in the planning stage; by next year we hope to have a good start on an AFRICAFOODS and an OCEANICFOODS for the south Pacific, and to have

increased the involvement of the countries of eastern Europe in the INFOODS network. Our ultimate goal is that everyone should have easy access to at least one regional group.

-- Development of a detailed description of users' needs. Last March, a users and needs meeting was held in Logan, Utah, gathering together individuals involved with the generation, compilation, and especially usage of food composition data. This meeting, organized for INFOODS by Carol Windham and Guarth Hansen of Utah State University, reviewed the initial plans of INFOODS and went on to formulate operational specifications of what was needed in terms of food composition data, and how INFOODS could best accommodate these needs and desires. We expect publication, within the next year, of the proceedings of this meeting.

Two important tasks for INFOODS were identified by this group. These were production of (1) guidelines on how best, temporarily, to fill the gaps in food composition tables and (2) guidelines on how to statistically process and present the data. These tasks are now being organized by the secretariat, and we expect to report preliminary results within the next year.

-- Establishment of a Secretariat. In order to keep all this moving along in a consistent, compatible, and timely fashion, a small secretariat was established at MIT. This consists of myself, John Klensin, and Vernon Young, a nutritional biochemist. In addition to dealing with the specific tasks already mentioned, the secretariat is involved with organizing and coordinating the taskforces and meetings and serving as a general, international clearinghouse and resource. To let people know what we are doing, a newsletter is issued quarterly, being sent to those who have shown interest. We intend to continue these activities during the next year; perhaps the most exciting plan is the starting of an INFOODS journal of food composition. This will be published by Academic Press and initially subsidized by the United Nations University.

IV. Summary

In summary food composition data are of fundamental importance, especially from a global perspective, the food composition data now available leave much to be desired. INFOODS was organized as an international collaboration to improve the situation by linking those working in the field, and identifying, organizing, initiating, and encouraging work in a number of specific areas. After the first year, we feel that we are well begun; we have started to formulate the problems and outline potential solutions. Our next step is the review and revision of what we are coming up with, and then we must start filling in the details. At this stage it is especially critical that we get input from people involved with all aspects of food composition data. INFOODS is a collaborative, and I would like to close this talk by issuing a general call for volunteers, for people who are seriously interested in critically reviewing our effort in all areas.