

Nutrient Composition Laboratory

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As part of the recent reorganization of the Beltsville Human Nutrition Research Center (BHNRC), the Food Composition Laboratory acquired its new name. In addition, other laboratories of BHNRC were reorganized, renamed and the direction of research aligned with current diet-health relationships (See Table 1).

Recently, part of the former Human Nutrition Information Service was integrated into BHNRC. These activities include the National Food Consumption Survey, the National Nutrient Data Bank and associated activities. Details of the organization are presented in Table 1.

The research activities of the Food Composition Laboratory (FCL) are an integral part of the National Nutrition Monitoring and Related Research program of the federal government. The ongoing research by scientists at FCL is outlined in Table 2. All research efforts at FCL are focused on the development of new food composition data as well as the improvement of existing data. Specifically, food analysis and the development of analytical methods and instrumentation are oriented toward those nutrients and food components associated with the reduced risk of diet-related diseases. Efforts in the improvement of data quality emphasize three areas of research, data evaluation, food sampling and reference materials (Table 2).

Research in several areas will be reactivated or started in the near future (Table 3). Again, each of the nutrients or food components identified with these research thrusts are associated with diet-related disorders or diseases. Research on these food components will be conducted collaboratively with scientists at the University of Minnesota, National Center for Health Statistics and Iowa State University. All research that has the potential to impact on the activities of the Nutrient Data Laboratory (USDA Handbook No. 8 and Nutrient Data Bank) is conducted collaboratively with scientists and staff of that group.

The Food Composition Laboratory has been well represented by its scientists and staff at national and international meetings, symposia and workshops. A list of scientific publications for Calendar Year 1993 is attached. Copies of each publication are available upon request.

Table 1.
Organization of Beltsville Human Nutrition Research Center
Center Director - Dr. Joseph Spence

Diet and Human Performance Laboratory

Research Leader - Dr. Joseph Judd
Define healthy diets through studies with human subjects.

Metabolism and Nutrient Interactions Laboratory

Research Leader - Dr. Judy Hallfrisch
Ascertain metabolism of specific and combinations of nutrients and food components.

Nutrient Requirements and Functions Laboratory

Research Leader - Dr. Orville Levander
Define dietary requirements for individual nutrients and food components.

Food Composition Laboratory

Research Leader - Dr. Gary R. Beecher
Develop new and improved analytical techniques and other systems for the improvement of food composition data.

Nutrient Data Laboratory

Acting Research Leader - Dr. Wayne Wolf
Collate, tabulate and disseminate data on the composition of foods.

Survey Systems and Food Consumption Laboratory

Acting Research Leader - Ms. Alanna Moshfegh
Conduct national food consumption surveys and disseminate information relative to the intake of foods, nutrients and other food components by the U.S. population

Table 2. Current Research Activities at the Food Composition Laboratory

Measurement Systems Development (Includes extraction/digestion, sample cleanup, separation/quantification).

Cholesterol
Dietary fiber
Fatty acids
Flavonoids
Minerals
Tocopherols and tocotrienols
Vitamin C

Instrumentation Development

Minerals - Simultaneous multi-element; organic/non-organic speciation

Improvement of Data Quality

Data evaluation - Development of systems for the critical evaluation of the quality of analytical data

Food sampling - Development of demographic and statistical based schemes

Reference materials - Research on organic nutrient stability

Food Analysis

Carotenoids in tomato products

Table 3.
New Research Areas at the Food Composition Laboratory

Carotenoids	Develop analytical methods for moderate and high fat foods Update database
Folate	Develop extraction and analytical methods
Isoflavonoids	Measure levels in soya-foods and other legume foods Develop database

**FOOD COMPOSITION LABORATORY
PUBLICATIONS**

January 1, 1993 - December 31, 1993

Anderson, E.M., Angyal, G.N., Weaver, C.M., Felkner, I.C., Wolf, W.R. and Worthy, B.E. (1993). Potential Application of LASER/Microbe Bioassay Technology for Determining Water-Soluble Vitamins in Foods. *J.A.O.A.C. Int'l.* 76(3):682-690.

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Miller-Ihli, N.J. and Greene, F.E. (1993). Direct Determination of Lead in Sugars Using Graphite Furnace Atomic Absorption Spectrometry. *At. Spect.* 14(4):85-89.

Riby, P.G. and Harnly, J.M. Characterization of a Helium Discharge for Hollow Anode Furnace Atomization Non-thermal Excitation Spectrometry. *J. Anal. At. Spect.* 8:945-953.

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