

ANALYTICAL METHODS CHALLENGES

Gary R. Beecher, Nutrient Composition Laboratory, BHNRC, ARS, USDA,
Beltsville MD

Research on the association of diet and health requires detailed knowledge of nutrients and components of foods. As the impact of food constituents on health is better understood, knowledge of the qualitative and quantitative aspects of these components in foods and diets becomes more important. Thus, the general challenge is to produce, qualitatively and quantitatively, accurate and precise data at reasonable cost for those components related to health in foods that are the major sources of nutrients.

There are several important factors that must be considered during the evaluation or development of any analytical method. These include: 1) separation and/or identification of food component of interest, 2) detection of low levels, often in the range of one part in one-million to one-billion, 3) accurate measurement, including complete extraction and the use of such controls as internal standards and reference materials, 4) reasonable cost which now must consider such items as hazardous waste disposal, cost of solvents, computerized data manipulation, as well as instrument and labor costs, and 5) large sample through-put which will make the method attractive to commercial analytical laboratories. Several examples of methods were discussed and food components that present analytical challenges were outlined.