CCQM Activities and Impact in Food Safety and Nutrition

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Accurate, reliable measurement of nutrient and contaminant content of food products is necessary to facilitate compliance with nutritional labeling requirements, protect consumers, provide traceability for food exports/imports, and to support studies of human nutritional and health assessment. Traceable chemical measurements and certified reference materials (CRMs) are necessary to underpin national and international regulations for food safety and nutrition. CRMs play an essential role in the validation of analytical methods, as control materials to assure measurement quality, and as tools to provide the metrological traceability to national and international standards.

The Consultative Committee on Metrology in Chemistry and Biology has conducted a number of comparisons over the past 15 years to support comparability of measurements related to food safety and nutritional assessment. For inorganic analysis, comparisons have supported food safety with toxic metals in a variety of food matrices (e.g., As, Cd, Pb, Hg, and methyl-Hg in wine, fish, rice, herbs, bovine liver, and/or tomato paste) and nutritional assessment (e.g., Ca, Cu, Fe, I, Se, and/or Zn in wheat flour, infant formula, soybean, and/or bovine liver). However, in the area of organic analysis, comparisons have been conducted primarily for analyte and matrix combinations related to safety concerns, e.g., antibiotics in meat, antifungals in fish, pesticides in tea, and melamine in milk). Only one study has focused on organic nutrients in food, i.e., vitamins in infant formula. All of these CCQM studies underpin and demonstrate the metrology institutes’ capabilities to deliver measurement services, primarily through CRMs and value assignment of proficiency testing schemes. This presentation will discuss the significant expansion of measurement capabilities internationally and improvements in accuracy and comparability among the metrology institutes since the implementation of CCQM comparison studies to support chemical measurements in food safety and nutrition.