



U.S. Pharmacopeia
The Standard of QualitySM

Food Protein Workshop: Developing a Toolbox of Analytical Solutions to Address Adulteration

June 16–17, 2009
USP Headquarters, Rockville, Maryland
USP Meeting Center

Background:

The availability of reliable quantitative methods to determine the total protein content of foods and food ingredients is important to ensure the quality and safety of food and to facilitate trade. Fraudulent activity that exploits the shortcomings of total nitrogen-based protein detection techniques, which are currently the standard for most total protein measurements for foods, has caused both injury and death. These total nitrogen-based protein determinations, pioneered in the 19th century, appear no longer to be adequate to sufficiently protect the public health and to facilitate trade. In these recent instances of adulteration, sellers of milk and wheat gluten containing food ingredients artificially increased their measured protein content by adding non-protein, nitrogen containing, compounds. Melamine was used as the adulterant in these recent cases, but in the past another nitrogen-rich non-protein organic compound, urea, was used. Significant advances in protein analysis science have been made over the past century, but successful application of these techniques as routine quality assurance methods for foods will require overcoming major hurdles. These include the availability of low cost and high throughput methods that are specific for protein, are validated for individual matrices, and are practical for all points of the supply chain. The development of appropriate associated reference materials to support these methods will also be essential to their implementation.

Overarching objectives:

The long-term objective is the global use of new or updated standards for food protein measurement to help prevent adulteration and aid in ensuring the quality and safety of the global food supply. This will require the development and validation of a toolbox of new analytical solutions tailored to individual food matrices and supply chain points. These must be linked through common reference materials to ensure that the same protein result is achieved regardless of the test used. The *Food Chemicals Codex*, as an authoritative and international reference for food ingredients, is undertaking the development and dissemination of such standards.

Workshop objectives:

The objective for this workshop is to initiate a vigorous scientific discussion to move protein measurement techniques beyond existing total nitrogen-based approaches for the foods. This should include:

- Pinpointing the challenges and opportunities for a food protein measurement paradigm shift that takes into account the needs of industry, consumers, and regulators.
- Identifying what analytical techniques are available or can be further developed to address the unique needs for individual food matrices and supply chain points.
- Determining how reference standards can best be used to ensure accurate and reproducible protein measurements.
- Proposing scientific collaborations and a consensus on objectives to move the project forward.

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