CREATING STANDARDS
For 25 Dietary Supplement Ingredients

301.924.7077
www.aoac.org

AOAC INTERNATIONAL
481 N. Frederick Avenue, Suite 500
Gaithersburg, Maryland 20877
AOAC and NIH to Collaborate with Industry to Create Standards for 25 Dietary Supplement Ingredients

There are a number of dietary supplements and botanicals that may cause concern for public health for which there are not validated analytical methods and reference materials. Very few publicly available and reliable analytical methods for dietary supplements exist. This makes it difficult to confirm ingredient identity or product composition and to conduct adequate clinical studies assessing safety and efficacy. The law requires that any enforcement action taken against dietary supplement products use publicly available methods.

Since the final good manufacturing practices (GMP) rule for dietary supplements was implemented in 2007, the Food and Drug Administration (FDA) has made it very clear that GMP inspections should be a major priority for dietary supplement manufacturers. Under the GMP rules, manufacturers must confirm that they have processes in place to ensure the quality of their work, including the appropriate test methods for the product. The GMPs for dietary supplements specify that test methods should be scientifically valid, referring to their ability to repeatedly deliver reliable results. There is a deficient of documented procedures in place to ensure the quality of the manufactured product, as evidenced by the number of violations issued.

There are many challenges in the analysis of complex dietary supplements. Dietary supplements are often mixtures of large numbers of compounds, some of them active, others similar but not active. If methods are to be applied to both raw materials and finished products, a method must span a vast range of analyte concentrations. Mixtures of polymers, common in supplements, pose problems with the lack of reference materials, a recurring theme in development and validating methods. Ingredients are often unstable, making extraction difficult and posing reference material challenges. There is a lack of uniform industry test standards necessary to help resolve the safety, quality, and regulatory issues that follow as a result. Because of the wide variety of issues in the industry, gathering the public and private sector stakeholders is important in discussing analytical needs and reaching consensus on priorities and to defining performance requirements where none exist.

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CREATING STANDARDS FOR 25 DIETARY SUPPLEMENT INGREDIENTS

National Institutes of Health (NIH) Awards AOAC with a Contract to Create Standards for 25 Dietary Supplement Ingredients

In September 2013, NIH/ODS awarded AOAC INTERNATIONAL with a contract to lead the dietary supplement industry to:

- identify and prioritize 25 dietary supplement ingredients for which systematically reviewed analytical methods are needed;
- develop standard method performance requirements (SMPRs) for 25 dietary supplement ingredients (see figure 1);
- deliver First Action Official MethodsSM for the prioritized dietary supplement ingredients where a method is clearly identified by the ERP as meeting the SMPR; and
- publish SMPRs and First Action Official MethodsSM in the Journal of the AOAC INTERNATIONAL and the Official Methods of AnalysisSM. An ERP can recommend successful First Action Official Methods for adoption as Final Action Official Methods, or if not successful, remove the methods or it can maintain its first action status and not be removed.

These standards will require dietary supplement suppliers, manufacturers of finished products, and all facets of the dietary supplement industry to participate in the process. Participation gives stakeholders a voice in addressing issues or topics of interest and building consensus on methodology impacting industry. Participation ensures that standards and methods resulting from this project are relevant and fit-for-purpose because they have been deemed by stakeholders as important to industry. Industry gets methods that can help level the playing field when it comes to inferior products.

AOAC Methods and Standards are Solutions

AOAC has proven that it can add value for stakeholders to participate by responding to industry needs for standards and methods. Since 2011, AOAC, through its standards development process, has provided stakeholders with an impressive list of standards (23) and methods (42) in the areas of infant formula, food, dietary supplements, and veterinary drug residues.
supplements, AOAC most recently developed SMPRs for St. John’s wort and a AOAC First Action Official Method of Analysis was approved based on the evaluation against the SMPR. In addition, AOAC provided the community with a suite of validation guidelines with the latest addition being *Guidelines for Validation of Botanical Identification Methods* and *Probability of Identification: A Statistical Model for the Validation of Qualitative Botanical Identification Methods*.

**Standards Development and Methods Development Process (see figure 2)**

**Advisory Panel:** The first step in developing voluntary consensus standards begins with establishing an advisory panel comprised of key leaders in the community. This panel identifies key stakeholders and subject matter experts, frames the issues, determines ingredients, and sets priorities for the stakeholder panel. The Panel will identify a comprehensive list of potential stakeholders for the standard-setting activities. These potential stakeholders may be officials from foreign and domestic regulatory agencies, global standards bodies, academia, contract research organizations, and any others who have an interest.

**Stakeholder Panel:** This panel is comprised of anyone with a material interest. Participants include, but are not limited to: product manufacturers, analyte/method subject matter experts, technology providers, method experts, government and regulatory agencies, contract research organizations, reference materials developers, ingredient manufacturers, method end users, academia, non-governmental organizations (ISO, IDF, etc...), AOAC volunteers, and others as identified. AOAC ensures a balanced group of voting stakeholders. Stakeholders engage and deliberate on the priority objectives as determined by the advisory panel. A stakeholder panel accomplishes its work via working groups to draft standards.

All stakeholders may share and contribute to the discussions; however consensus of the stakeholders is demonstrated via voting conducted with a vetted, balanced representative group of stakeholders in which all perspectives are represented. Stakeholder panels deliberate and reach consensus on standards. To ensure stakeholder panel meetings include a process in which all stakeholders are afforded due process, the latest edition of Robert’s Rules of Order serves as the parliamentary procedure framework by which stakeholder panel deliberations are facilitated. AOAC follows its standard governance processes and the activities are conducted in accordance with USOMB Circular A-119 and the US National Technology Transfer and Advancement Act (Public Law 113-104), so that the resulting performance requirements will be considered as voluntary consensus standards.

**Working Groups:** Working groups provide scientific credibility by establishing draft standard method performance requirements (SMPRs). The working group is the “problem solving” group to identify the complexity of each ingredient and provide solutions as they arise. Working groups consider fitness for purpose, matrices, analytes, analytical range, stability, interferences/specificity, sample extraction, limits of detection, and types of instrumentation (screening or confirmatory techniques). Working groups reconcile public comments received on draft standards and make recommendations on standards to the stakeholder panel. These groups include global government, industry, and academia representatives.
**Expert Review Panels (ERPs):** ERPs are created to provide stakeholders with an expert resource to evaluate analytical solutions to identified needs and concerns. ERPs are responsible for the careful scrutiny and systematic review of methods and the adoption of methods as AOAC First Action *Official Methods of Analysis*. ERPs are comprised of stakeholders whose collected expertise are balanced and are vetted by the OMB for conflict of interest.

As appointed AOAC volunteers, ERP members apply their collective expertise and use the standard(s) developed by the stakeholders to evaluate submitted methods. ERPs carefully scrutinize methods and data available in an unbiased, science-based peer review and evaluation against approved standard method performance requirements (adopted by stakeholder panel). The ERP voting on methods for AOAC First Action Official Methods status is conducted in accordance to the policy on AOAC First Action *Official Methods of Analysis*<sup>SM</sup>.

**How Can Private and Public Stakeholders Participate?**

AOAC, as an independent third party, brings competitors and various sectors together to share different perspectives and collaborate effectively toward a common goal—voluntary consensus standards ultimately leading to *Official Methods of Analysis*<sup>SM</sup>.

The inaugural meeting of the Stakeholder Panel for Dietary Supplements (SPDS) is scheduled for March 21, 2014 at the Hilton Gaithersburg, Gaithersburg, MD to launch the first three (3) ingredients - Chondroitin, Phosphodiesterase Type 5 Inhibitors (PDE5), and Anthocyanins as identified by the Advisory Panel.

For more information: [www.aoac.org](http://www.aoac.org), Standards Development, Stakeholder Panel on Dietary Supplements (SPDS).

**Contact Dawn L. Frazier, CAE, Executive Scientific Business Development, dfrazier@aoac.org or call 301.924.7077, ext 117.**