Dietary Supplement Laboratory Quality Assurance Program

Request for participation – Exercise 3 Now Open

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Dear Colleagues,

Thank you for your interest and/or past participation in NIST Quality Assurance Programs (QAPs). A call for participants in Exercise 3 of the Dietary Supplement Laboratory Quality Assurance Program (DSQAP) is now open. DSQAP is designed to assist laboratories in the development and validation of new analytical methods, in improving the quality of their analytical measurements, and in supporting compliance with federal regulations enforced by the US FDA, USDA, and other international bodies. Exercise 3 will offer opportunities for participants to measure mass fractions of toxic elements, fat-soluble vitamins, water-soluble vitamins, and phytochemicals in dietary supplement ingredients and finished products. Laboratories may elect to participate in some or all studies (e.g., only toxic elements and fat-soluble vitamins) or report only selected analytes (e.g., arsenic and lead, but not cadmium and mercury), as applicable to the work done in their laboratories.

Participation in DSQAP is free of charge with the support of NIH Office of Dietary Supplements (ODS), although participants will be required to pay for the cost of sample shipment by providing NIST with a shipping account number using UPS, FedEx (including TNT), or DHL. International participants must provide an import shipping account number, if applicable. Participants are responsible for all incurred shipping charges, including those that may result from shipments being returned to NIST because of customs clearance issues. In no cases are participants paid to participate in DSQAP.

Instructions for sign up for new and existing NIST QAP participants are attached. Registration will open on January 16, 2024 and will close on February 16, 2024. Samples will be distributed in late March/early April 2024.

We hope that within this exercise you will find studies that are of interest and use to your laboratory. Future DSQAP studies may address additional areas such as authenticity and microbial contaminants, as needs are identified. If you have any suggestions for studies or would like more information regarding DSQAP and other NIST QAPs, please send your request to QAPHUB@nist.gov or visit https://qa.nist.gov.

Please let us know if you have questions. We look forward to your participation in this and future DSQAP exercises.

Best regards,
DSQAP Team

Scan for more information on DSQAP, major accomplishments, and historical exercises.

Scan to navigate to the QAP HUB Webpage.

Dietary Supplement Laboratory Quality Assurance Program (DSQAP)

Exercise 3 – Studies

Toxic Elements: Kava

Purpose

Arsenic, cadmium, lead, and mercury, sometimes called the "big four", are environmental contaminants that can be present in foods and dietary supplements. These contaminants can be incurred naturally through environmental exposure or through downstream processing of a product. The U.S. FDA has set goals to lower the intake of these toxic elements. As regulations strive for toxic element levels as low as possible in foods and supplements, laboratories are challenged to validate methods with lower LOQs.

Rationale

This study will be used by NIST to determine any community-wide analytical challenges and support improvement of quantitative measurements through testing of two reference materials (raw botanical material and an extract material). This study will also assist the community with evaluating internal analytical challenges associated with toxic elements measurements in botanical supplementation matrices.

Design

Samples	Analytes
Kava Root and Kava Extract	Total Arsenic, Cadmium, Lead, Mercury

Fat-Soluble Vitamins: Multivitamins

Purpose

Vitamin A is essential to maintain normal human vision, for the function of the immune and reproductive systems, as well as the heart, lungs, kidneys, and other organs. Fat-soluble vitamins in multivitamin supplements are generally encapsulated to aid in stability and solubility. Analyte encapsulation can challenge analytical methods and ensuring complete extraction and accurate quantitation is essential for understanding intake values, bioactivity, and correlation to health benefits.

Rationale

This study will be used by NIST to determine any community-wide analytical challenges and support improvement of vitamin A measurements through appropriate reference materials and educational resources. This study will also assist the community with evaluating internal analytical challenges associated with calibration and sample preparation effects on fat-soluble vitamin quantitation.

Design

Samples	Analytes
Multivitamin A and Multivitamin B	Total Retinol and Retinyl Acetate

Water-Soluble Vitamins: Solid Oral Dosage Form

Purpose

B vitamins are a group of water-soluble compounds important for maintaining good health and well-being. These vitamins impact energy levels, brain function, and cell metabolism as they play roles in converting food into energy, creating new blood cells, and maintaining healthy cells throughout the body. Vitamin B deficiencies have been linked to anemia, depression, fatigue, muscle weakness, and poor memory. B vitamins can be supplemented on their own to address these deficiencies; however, they are commonly added to numerous supplement formulations with other active ingredients that target various pharmacological effects. Accurate determination of the vitamins is essential for understanding intake values, bioactivity, and correlation to health benefits.

Rationale

This study will be used by NIST to determine any community-wide analytical challenges and support improvement of water-soluble vitamin measurements through appropriate reference materials and educational resources. This study will also assist the community with evaluating internal analytical challenges associated with calibration and sample preparation effects on B vitamin quantitation in finished dietary supplement matrices.

Design

Samples	Analytes
Yohimbe Containing SODF and Multivitamin B	Thiamin (B_1) and Riboflavin (B_2)

Botanicals: Kava

Purpose

Kava (*Piper methysticum*), a member of the Piperaceae family, is a perennial plant native to the Pacific islands. Kava has a history of medical and ceremonial uses to achieve elevated levels of relaxation in the Pacific and is currently used worldwide to aid in the reduction of anxiety and stress. Preparations of kava are typically made from the root chips and lateral roots and are sold as dietary supplements in various forms. The pharmacological activity of kava is largely attributed to the plant's marker compounds, kava lactones. Accurate determination of these compounds in supplementation is critical to ensure quality and facilitate standardization for clinical investigations of health effects.

Rationale

Reference materials and appropriate analytical techniques are essential in understanding the marker compounds in kava and the connection to health outcomes. Participation in this DSQAP study provides opportunities for laboratories to evaluate their current inhouse method performance and will also be used by NIST to determine any community-wide analytical challenges and support measurement improvements through appropriate reference materials and educational resources.

Design

Samples	Analytes
Kava Root and Kava Extract	Kavain, Methysticin, Yangonin, Dihydrokavain, Dihydromethysticin, Desmethoxyyangonin, and Flavokawain (A, B, and C)

Registration

Log into your account https://qa-hub.nist.gov and click on *Enroll to upcoming exercises* in the top right corner.

If you need help with enrollment or creating an account on HUB, please find instructions at https://www.nist.gov/document/qaphub-registration-instructions or email us at QAPHUB@nist.gov

Scan QR code to navigate to the QAP Registration Instructions

Scan QR code to navigate to the QAP HUB Webpage.