

10th Annual Oxford International Conference on the Science of Botanicals (ICSB)

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NIST Tools for Quality Assurance in Botanical Dietary Supplement Measurements

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The accurate analysis of botanical dietary supplements presents significant challenges for the analytical laboratory. Analyte stability, extraction efficiency, and availability of calibration materials and appropriate analytical controls all contribute to the difficulty. The National Institute of Standards and Technology (NIST) has been working with the National Institutes of Health Office of Dietary Supplements (NIH/ODS) to address these challenges. NIST has developed several Standard Reference Materials (SRMs) for dietary supplements, a process which includes acquisition of real materials and thorough chemical characterization to assign certified mass fractions for active and marker compounds as well as contaminants. During the certification process, NIST scientists often develop new analytical methods and generate stability and extraction data that can be useful to the dietary supplement community. In addition, NIST administers a dietary supplement laboratory quality assurance program (DSQAP) in which 88 laboratories have participated. Laboratory inter-comparison programs such as the DSQAP provide tools that allow analysts and laboratories to assess how their methods perform relative to the community and relative to an accepted value. In addition, the DSQAP has identified areas and samples with significant measurement imprecision and worked to bring the measurements of participants into concordance. Proper use of dietary supplement SRMs and participation in inter-comparison programs such as the DSQAP are important tools for analytical laboratories to improve and confirm method accuracy and precision.

Acknowledgements: Funding and support from the Analytical Methods/Reference Materials (AMRM) Program at NIH/ODS, as well as the many staff scientists and guest researchers at NIST who have contributed to the development of the many botanical dietary supplement SRMs are gratefully acknowledged. The author would also like to acknowledge the co-coordinators of the DSQAP, Catherine (Kate) Rimmer and Laura Wood.

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