

Oral presentation

Standardizing modern ethnobotanicals: cranberry products as examples of herbal dietary supplement Standard Reference Materials

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Introduction. Modern ethnobotanical remedies in developed countries, such as the US, have gained popularity as herbal dietary supplements due to the perception that science and industry have improved product safety and consistency. However, research findings and clinical results among similar supplements are often inconsistent, possibly due to a lack of reference materials. In response to this growing need, a large, collaborative effort between NIST, the Office of Dietary Supplements (ODS) at NIH and the Center for Drug Evaluation and Research (CDER) of the FDA, is directed towards the development of Standard Reference Materials for popular dietary supplements. One exemplary project is focused on cranberry (*Vaccinium macrocarpon* Ait.) products, which have recently become popular due to their anti-oxidant activity and anti-adhesion effects on *E. coli* based urinary-tract infections.^{1,2}

Objectives. To develop Standard Reference Materials for popular dietary supplements, specifically cranberry.

Methods. Materials of several different product forms of cranberry (juice, powder, extract and tablet) were chemically analyzed using a variety of chromatographic methods ranging from ion chromatography to LC/MS.

Results. Methods have been developed to consistently analyze and quantify the levels of numerous important cranberry constituents in compound classes such as flavanols, organic acids, and anthocyanins. Additionally, several different extraction and hydrolysis techniques were evaluated to identify the most exhaustive techniques in yielding the analytes of interest.

Conclusion. Standard Reference Materials of common herbal dietary supplements, such as cranberry, are being developed. They are a powerful new tool in the development of new analytical methods, as quality controls and for the support of future clinical trials of modern ethnobotanicals.

Keywords: *Vaccinium*, botanicals, chromatography, LC/MS, SRM

Selected References

1 Di Martino, P., Agniel, R., David, K., Templer, C., Gaillard, J.L., Denys, P., and Botto, H. 2006. Reduction of *Escherichia coli* adherence to uroepithelial bladder cells after consumption of cranberry juice: a double-blind randomized placebo-controlled cross-over trial. *World Journal of Urology* 24:21-27.

2 He, X.J. and Liu, R.H. 2006. Cranberry phytochemicals: Isolation, structure elucidation, and their antiproliferative and antioxidant activities. *Journal of Agricultural and Food Chemistry* 54:7069-7074.

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