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## Determination of Organic Acids in Cranberry and Bilberry Extracts

The dietary supplement industry is a rapidly growing market segment with U.S. sales estimated at nearly \$20 billion.<sup>1</sup> Nearly 50% of the U.S. population claim that they have used dietary supplements as more health-conscious consumers seek complementary and alternative medical treatments.

The primary mission of the Office of Dietary Supplements at the National Institutes of Health (NIH) is to promote the quality, safety, and efficacy of dietary supplements.<sup>2</sup> To accomplish this mission, authentic reference materials that closely match the matrix components of the dietary supplements are needed. *Vaccinium* (e.g., cranberries, blueberries, and bilberries) Standard Reference Materials (SRMs) are being developed at the at the National Institute of Standards and Technologies (NIST) in collaboration with the NIH-ODS to evaluate these types of dietary supplements.<sup>3</sup> Several SRMs are currently available from NIST, with certified values for organic acids to aid dietary supplement and juice manufacturers in their analytical method development and QA/QC operations.<sup>4</sup> Further work to certify anthocyanins and anthocyanidins is under way.

Because products from cranberries provide various health benefits (such as prevention of urinary tract infections, stomach ulcers, and dental caries), these products are among the top selling classes of herbal dietary supplements in the U.S. Cranberry consumption also reportedly reduces the incidence of various cancers.<sup>5</sup> Although the primary benefits of the *Vaccinium* species are derived from their antioxidant properties, the relative amounts of organic acids can significantly influence the characteristics of the berries. For example, organic acids

are known to impart specific flavors, and the specific ratios in fruit juices can be used to detect adulteration. In addition, organic acids are often used to control pH and can be an indicator of product quality.<sup>6</sup>

The work shown here demonstrates the determination of quinic, malic, and citric acids in cranberry and bilberry extracts using an IonPac<sup>®</sup> AS11-HC column with suppressed conductivity detection (Figures 1 and 2).

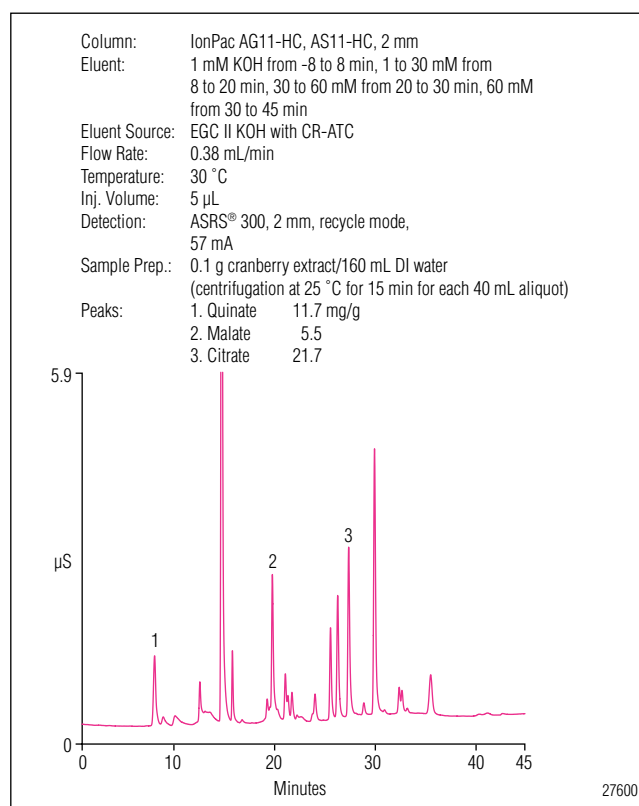


Figure 1. Determination of quinic, malic, and citric acids in cranberry extract.

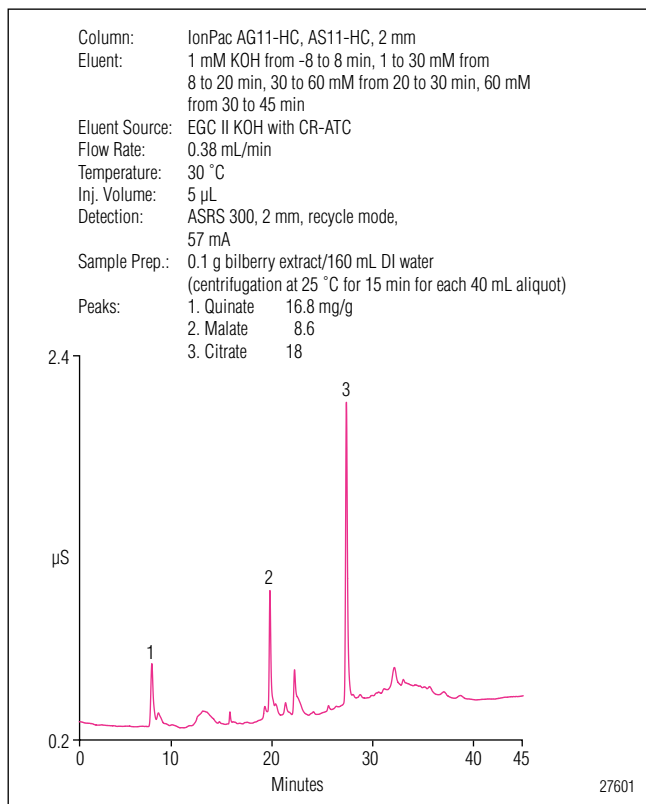


Figure 2. Determination of quinic, malic, and citric acids in bilberry extract.

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