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New International Calibration Standard (ICS-R3) for HPLC Analysis of *Rho*-iso- α -acids

Submitted on behalf of the International Hop Standards Committee

The International Hop Standards Committee (IHSC) announces the release of a new calibration standard, ICS-R3, for the HPLC analysis of *Rho*-iso- α -acids.

Descriptors: new calibration standard, HPLC analysis, hop products, Iso- α -acids, EBC Method

Background

In April 2001, the ASBC, EBC, IoB (now IBD), and BCOJ approved the release of a set of HPLC standards for use in the quantitative determination of isomerized and reduced-isomerized α -acids in hop products and in beer. Four standards were produced:

- DCHA-Iso, ICS-I1 (Iso- α -acids standard);
- DCHA-Rho, ICS-R1 (*Rho*-iso- α -acids standard);
- Tetra, ICS-T1 (Tetrahydroiso- α -acids standard);
- DCHA-Hexa, ICS-H1 (Hexahydroiso- α -acids standard).

The purity of each standard was determined using various HPLC procedures, elemental analysis and other methods. In each case, the total content of major isomers and homologs was declared and, before release, the stability of the standard was assessed and recommendations made regarding storage and method of use. An isocratic version of EBC Method 7.8 (now EBC 7.9) was recommended as a convenient and generally applicable HPLC method for use in the analysis of unknown samples containing isomerized or reduced isomerized α -acids.

Over a period of several years, the committee monitored the stocks of the four standards via careful HPLC analysis, finally concluding that the standards had maintained their declared compositions and had not undergone significant chemical change.

Following exhaustion of the original stocks, the "Iso", "*Rho*", "Tetra" and "Hexa" standards were replaced by new standards, ICS-I2 (now followed by ICS-I3), ICS-R2, ICS-T2 (now followed by ICS-T3) and ICS-H2.

Release of ICS-R3

Stocks of ICS-R2 are now almost exhausted. In anticipation of this, in 2015 the subcommittee initiated the preparation of a replacement standard. The new standard was prepared in cooperation between the laboratories of Kalsec, Inc. and S. S. Steiner, Inc., under the

guidance of committee members, Brian Buffin, John Paul Maye and Bob Smith. Packaging was carried out in the laboratory of S. S. Steiner, Inc. The committee records its considerable appreciation to Jeremy Leker for all his skilled input to the successful purification of this new standard. Following preparation, committee members conducted extensive analysis in order to validate the new standard and assign a value to the content of "*Rho*" isomers and analogs, this work including a collaborative HPLC study in which the prospective new standard was crosschecked against the existing standard.

This new standard, ICS-R3, now becomes the recommended standard and should be used for commercial transactions as well as for quality control purposes.

Use of the New Standard

As would be expected, the composition of ICS-R3 is not identical to the standard it replaces, but it can be used in exactly the same way. The differences observed when quantifying *Rho*-iso- α -acids using ICS-R3 instead of ICS-R2 will be found to be very slight and usually within the normal range of experimental error.

How to Purchase

Stocks of ICS-R3 are being divided between ASBC in the USA and Labor Veritas in Switzerland. Analysts can purchase the new standard in the usual 250 mg vials.* Orders are dispatched by express mail to minimize risk of damage in transit.

Detailed information pertaining to each standard, including full instructions for use, is available from ASBC or Labor Veritas upon request and is automatically supplied with each purchase. ICS-R2 will now be available only while stocks last.

* Purchasers in the USA, Canada, Central and South America should contact ASBC headquarters (email: asbc@scisoc.org, tel: +1 (651) 454-7250), while those in Europe and Africa should direct enquiries to Labor Veritas, Zürich, Switzerland (email: admin@laborveritas.ch, tel: +41 (0) 44 283 29 30). Persons ordering from other parts of the world may make their approach to either party

