M. Biendl

Determination of Hop Oil Content by Steam Distillation According to IOB Method 6.3

Submitted on behalf of the Analysis Committee of the European Brewery Convention

BC 32 Hops

(Descriptors: Collaborative trial.

Deskriptoren: Ringanalyse).

Introduction

The EBC Analysis Committee has tested the IOB Method 6.3 "Hop Oil Content of Hops and Hop Products" by collaborative trial. In winter 2000/2001 this collaborative trial was conducted using three samples of hop pellets with different hop oil levels in the range 0.4 – 2.3 ml/100 g. Five members of the EBC Analysis Committee and one member of AHA (Arbeitsgruppe Hopfenanalyse) took part in the collaborative trial. All participants used a distillation still manufactured by "Normschliff" (article number: 8503000) which is identical to the still as specified in the British Pharmacopoeia and recommended in the IOB Method 6.3.

Experimental

Three samples were circulated to six participants. Laboratories were asked to determine the hop oil content in duplicate and report the result to two decimal places.

Results and discussion

Original data from the collaborative trial is given in table 1. No outliers were identified. The precision data is summarized in table 2. Values for r_{95} are in the range of 0.06 – 0.29 and values for R_{95} are in the range of 0.13 – 0.86.

Conclusion

Based on the results of this collaborative trial the EBC Analysis Committee decided, in its 93rd meeting, to adopt IOB Method 6.3. This method will be published in the 2002-update of Analytica-EBC.

Table 1 Original data from the collaborative trial (all results are given as ml/100 g)

Lab	Hop Pellet 1	Hop Pellet 2	Hop Pellet 3
1	0.44/0.45	1.18/1.16	2.29/2.31
2	0.48/0.43	1.03/1.18	2.58/2.28
3	0.50/0.46	1.40/1.39	2.39/2.31
4	0.40/0.38	1.22/1.27	2.83/2.70
5	0.38/.35	1.12/1.10	1.80/1.90
6	0.44/0.44	1.26/1.23	2.31/2.34

Table 2 Summary of the precision data (calculated from the data of table 1)

	Hop Pellet 1	Hop Pellet 2	Hop Pellet 3
Number of laboratories	6	6	6
Grand mean	0.43	1.21	2.34
Repeatability standard deviation	0.021	0.047	0.102
Reproducibility standard deviation	0.046	0.114	0.302
Repeatability r_{95}	0.06	0.13	0.29
Reproducibility R_{95}	0.13	0.32	0.86