

Vicinal Diketones and Precursors

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CONCLUSION

Results from the improved micro method (7) for vicinal diketones (VDK) in beer were less precise than those obtained in previous testing with the EBC method (3).

RECOMMENDATIONS

The subcommittee should be discharged.

In 1979–80, the subcommittee tested the EBC method (6); the results obtained were imprecise (3). The improved micro method (7) was selected for testing in 1980–81.

PROCEDURE

Three pairs of beer samples were analyzed by the improved micro method. One pair, designated A and B, had low VDK levels. The second pair, C and D, was prepared as follows. Measured quantities of freshly distilled diacetyl (calculated to add 0.05 and 0.10 mg/L) were placed in two 5-gal tanks. The same finished beer was added to both. The tanks were shaken and allowed to stand for over 48 hr. The beer was then bottled and pasteurized. The third sample pair, E and F, consisted of two shipments of an imported beer obtained from two local distributors.

The method used was the improved micro method of Inoue (7). In each case, the paired samples were treated statistically by the Youden Unit Block design (8).

RESULTS AND DISCUSSION

Five collaborators submitted results (Table I). Two of the results of collaborator 2 were outliers by Dixon's test (4,5). This collaborator reported some difficulty with the color development portion of the procedure. The results of collaborators 3, 4, and 5 were in very good agreement and were lower than those obtained by the others.

With only 5 collaborators, the Youden Unit Block statistical treatments are of questionable validity and are therefore not shown. The results for the A-B sample pair, which had the lowest VDK concentration, were the most precise. This indicates that poor sensitivity at very low VDK levels does not account for the poor agreement between collaborators.

Three of the collaborators analyzed portions of the same samples with their normal VDK method. Two used the broad spectrum procedure (1), and the third used the micro method (1). Results

TABLE I
Results (mg/L) for VDK in Beer by Improved Micro Method

Lab. Number	Sample							
	Blank	Slope	A	B	C	D	E	F
1	0.002	0.0119	0.07	0.07	0.17	0.12	0.11	0.19
2	0.034	0.0128	0.07	0.24 ^a	0.31	0.47 ^a	0.23	0.20
3	0.012	0.0108	0.03	0.03	0.06	0.04	0.04	0.03
4	0.009	0.0077	0.03	0.04	0.07	0.05	0.03	0.05
5	0.008	0.0115	0.02	0.03	0.07	0.04	0.02	0.03
Mean			0.044	0.043	0.136	0.063	0.086	0.100

^aOutlier by Dixon's test at 95% confidence level, not included in mean.

TABLE II
Results (mg/L) for VDK in Beer by Other Methods

Lab. No.	Method	Sample					
		A	B	C	D	E	F
1	Broad spectrum	0.03	0.02	0.06	0.03	0.26	0.31
3	Broad spectrum	0.03	0.05	0.07	0.06	0.13	0.15
6	Micro method	0.05	0.06	0.08	0.08	0.12	0.13

obtained (Table II) were similar in magnitude to the improved micro method results of laboratories 3 and 4, except for the European beers (pair E-F). The broad spectrum method has been shown previously to respond to acetoin which is present in relatively high concentrations in many European beers (2).

The limited number of results received was not sufficient to represent an adequate test of the improved micro method. The method, at least in some hands, did not appear to suffer from the

acetoin problem of the broad spectrum procedure (2) or from the problems encountered with the EBC method (3).

LITERATURE CITED

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