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# REPORT ON HONEY

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J. W. WHITE, JR.

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## REPORT ON HONEY

By JONATHAN W. WHITE, JR. (Eastern Regional Research Laboratory,\* Philadelphia 18, Pa.), *Associate Referee*

A selective adsorption method for the sugar analysis of honey was presented at the 1953 meeting of the Association and was published in *This Journal*, **37**, 466 (1954). The method has been recommended for collaborative study.

As a preliminary step to a collaborative program, the Associate Referee exchanged honey samples with Mr. G. H. Austin, Central Experimental

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\* One of the laboratories of the Eastern Utilization Research and Development Division, Agricultural Research Service, U. S. Department of Agriculture.

Farm, Canadian Department of Agriculture, Ottawa. Each investigator analyzed six samples of honey; adsorption separations and determinations were made in duplicate for the incoming three samples, and single adsorption separations and duplicate determinations were made of the outgoing samples. Results are shown in Table 1.

TABLE 1.—*Analysis of honey samples in two laboratories by the selective adsorption method*

NO.	ANALYST	GLUCOSE	FRUCTOSE	SUCROSE	"MALTOSE"	HIGHER SUGARS	WATER
1	W	36.59	36.92	0.56	6.87	0.38	16.4
	W	36.89	37.31	0.72	7.09	0.39	—
	A	36.57	36.73	1.05	6.21	1.41	17.5
2	W	35.42	37.61	0.32	5.55	0.37	18.6
	W	35.56	37.02	0.64	5.78	0.44	—
	A	33.63	37.96	0.51	4.80	1.79	18.9
3	W	36.36	38.68	0.40	5.41	0.79	15.9
	W	36.11	39.38	0.54	5.64	0.91	—
	A	35.93	39.05	0.69	5.23	1.95	16.0
4	W	32.11	36.69	1.42	6.35	1.04	19.2
	A	31.67	36.56	1.31	6.39	2.56	18.9
	A	31.99	36.86	1.28	6.44	2.35	—
5	W	27.65	37.34	1.35	10.88	1.47	15.3
	A	28.10	39.07	1.06	10.57	3.16	15.4
	A	28.18	38.96	1.05	10.53	3.30	—
6	W	31.68	37.85	0.83	6.66	1.00	17.8
	A	32.69	37.41	1.22	6.33	2.50	18.3
	A	32.50	37.72	1.32	6.51	2.27	—
Intralaboratory Std Deviation		0.16	0.31	0.11	0.13	—	—
Interlaboratory differences <sup>a</sup> within:							
1s		none	3	1	1	—	—
2s		3	4	3	2	—	—
3s		3	5	4	4	—	—

<sup>a</sup> Difference between mean of duplicates from one laboratory and single value from other laboratory.

Table 1 also shows the intralaboratory standard deviation and the extent of the variation of the interlaboratory results in terms of the intralaboratory standard deviation. It may be seen that:

(1) Agreement within a laboratory is better than that between labora-

tories. The intralaboratory standard deviations are encouragingly small.

(2) Three-fourths of the deviations between laboratories fall within three times the standard deviation, and half within  $2s$ . For fructose, 4 of 6 are within  $2s$ ; however,  $s$  is twice as large for fructose as for the other sugars.

(3) Values for higher sugars are variable. These sugars represent all reducing material stripped from the column by 50 per cent ethanol. Reducing material includes trisaccharide and higher sugars and also any material of lower molecular weight not removed by the 1 and 7 per cent ethanol elutions.

Mr. Austin reported that all samples were not run on the same lot of carbon. Samples 1 and 3 were run on the lot furnished by the Associate Referee, and Sample 2 was run on another lot acquired locally. On checking, it was found that it was the sixth sample run on that particular column. Samples 4, 5, and 6 were run on still another lot of carbon purchased directly from the Atlas Powder Company. This lot seemed to be the most satisfactory; it was relatively fast and retained the disaccharide well. Mr. Austin felt that the chief drawback of the procedure for routine analysis was the great variation in the carbon. He was satisfied that the method itself was fast and easily reproducible.

It is recommended\* that the procedure be subjected to further collaborative study.

#### ACKNOWLEDGMENT

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\* For report of Subcommittee D and action of the Association, see *This Journal*, 40, 38, 39 (1957).