XXVI. NOTE ON THE PREPARATION OF YEAST-JUICE BY BUCHNER'S METHOD.

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SOME years ago (1920), before the yeast obtainable from breweries had regained its pre-war qualities, considerable difficulty was experienced in obtaining yeast-juice of a satisfactory degree of activity. It was, however, observed that, when the ground mass was kept for a few hours before being pressed out, the resulting juice was more active than that obtained by pressing at once. Accordingly a few experiments were made to test the reality of this effect and to ascertain under what conditions it was produced.

It was found that as a rule the juice obtained by pressing after an interval of 1-2 hours reacted much more vigorously with added phosphate than that pressed out at once.

This effect has been recently confirmed, although the yeast-juice obtained by direct pressing on this occasion was much more active than that prepared six years ago. Accordingly the preservation of the ground mass at air temperature for 2 hours before it is pressed out has been adopted as part of the routine of the preparation. Preservation of the expressed yeast-juice does not produce the same effect, so that it is probably due to some action involving constituents of the cell which are retained in the press cake. This question is being further investigated. All the experiments have been made with top-yeast from an English brewery.

Exp. 1. The ground mass was kept at air temperature and pressings made immediately after grinding and at intervals of 22 mins., 42 mins., 1 hr. 42 mins., 2 hrs. 42 mins., and 3 hrs. 42 mins. after grinding. Some of the juice from the first pressing was also kept at air temperature for 2 hours and then examined.

In each case two quantities of 25 cc. yeast-juice + 1 g. glucose + 0.2 cc. toluene were incubated at 25° for 35 mins. and the rate of fermentation observed. 2.5 cc. 0.6 *M* K₂HPO₄ + 2.5 cc. H₂O were then added to one of these quantities and 5 cc. 0.6 *M* K₂HPO₄ to the second and the rate of fermentation again observed.

The results were as follows:

Interval between grinding and pressing	Initial rate cc. per 5 mins.	After addition of			
		2.5 cc. 0.6 <i>M</i> K ₂ HPO ₄		5 cc. 0.6 <i>M</i> K ₂ HPO ₄	
		Max. rate cc. per 5 mins.	Total in 45 mins.	Max. rate cc. per 5 mins.	Total in 45 mins.
0	1.6	3	23.4	2.4	11.5
22 mins.	3.3	4.6	29.8	3	24.5
42 mins.	3.1	4.6	34	8.7	35.6
1 hr. 42 mins.	3.6	6.1	44.8	5.6	36.2
2 hrs. 42 mins.	2.8	6.1	39.8	4.6	37
3 hrs. 42 mins.	3	5	40.9	3.6	29
Juice preserved for 2 hrs.	1.6	3.2	20.6	2.4	13.4

Exp. 2. The experiment was similar to *Exp. 1* but only two pressings were made and three different quantities of phosphate (in this case a mixture of 8 vols. of 0.6 *M* KH_2PO_4 with 2 of 0.6 *M* K_2HPO_4) were used.

Interval between pressing and grinding	Initial rate cc. per 5 mins.	No addition Total in 45 mins.	After addition of phosphate					
			5 cc.		10 cc.		15 cc.	
			Max. rate	Total in 45 mins.	Max. rate	Total in 45 mins.	Max. rate	Total in 45 mins.
0	1.65	8.2	9.5	78.3	5.4	46.4	4.8	28.6
2 hrs.	1.5	10.8	19.3	85.8	16.1	111.8	8.3	61

SUMMARY.

In preparing yeast-juice by the grinding method from English top-yeast it is usually advantageous to preserve the ground mass for two hours at air temperature before pressing out the juice.