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RELEASE OF HCN IN SOIBUM FERMENTATION

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Release of HCN from sliced bamboo vegetables subjected to natural fermentation went up as pH drop, formation of titratable acid and population of lactic acid bacteria had been increased with time. However, all these parameters were pronounced in the fermenting mashes of *Dendrocalamus giganteus* as compared to that of *Bambusa tulda*. Thus degree of HCN release was correlated to the amount of acid accumulated in fermentation.

Keywords : Acidity; HCN; Soibum; Taxiphyllin degradation

The bamboo rhizomes when young and succulent are utilizable as vegetables and their nutritional values have been published elsewhere. However, taxiphyllin, a cyanogenic glucoside of HCN, benzaldehyde and β-D-glucose occurs in the bamboos[1-4] upto the extent of 8000 mg/kg immature shoot tip[5]. In a study, no cyanogenic glucoside other than taxiphyllin was found to occur in the bamboo vegetables of *D.giganteus* and *B.tulda*[6]. In Manipur, bamboo vegetables have been distinctly prepared into Soibum through natural lactic acid fermentation. The present study narrated the fate of taxiphyllin in Soibum fermentation.

The slices prepared from succulent vegetables of *D.giganteus* and *B.tulda* were packed specieswise avoiding the air maximally inside 500 ml capacity beakers.

The beakers were closed tightly with polythene papers and left at room temperature (26 ± 4°C) for the natural fermentation. Periodic studies for the determinations of pH, counts of lactic acid bacteria(microscopically), titratable acid[7] and release of HCN[8] were carried out at an interval of 5 days upto one month. All the results were expressed as the means of triplicate determinations.

From the data presented in table 1, it is clear that 20 days fermentation has enough course for causing population development of lactic acid bacteria, accumulation of titratable acid and pH drop. In the fermentation of both the species, periodical increase in the release of HCN was highest during the first 5 days and this finding was coincided with the accumulation of about 50% of the total acidity of the 20 days old mashes. The release of HCN was then decreased as the acidity dropped in 25 and 30 days old mashes.

It was thus obvious that the natrual fermentation of Soibum yielded the acid required for the degradation of taxiphyllin into HCN and other components. The acid induced degradation of taxiphyllin was a clue came from the better yields of titratable acid and HCN in *D.giganteus* mashes as compared to that in *B.tulda* mashes. This view got the support from other report[5] on cassava fermentation. The study on Soibum fermentation presented that lactic acid bacteria indirectly caused the release of HCN by accumulating acid. Further, it could be deduced that the natural fermentation of Soibum reduced the HCN of raw mashes at the extent it had been released out.

Table 1. Periodic changes of pH, titratable acid, HCN release and counts of lactic acid bacteria during 30 days fermentation of *B.tulda* and *D.giganteus* mashes.

Entities	Days						
	0	5	10	15	20	25	30
B.tulda							
pH	5.60	3.80	3.67	3.54	3.50	3.60	3.61
Titratable acid expressed as lactic acid equivalent(%)	0.02	0.67	0.78	1.01	1.12	1.11	1.07
HCN release in mg/100g/24 hr.	0.31	4.17	6.41	7.98	8.78	6.13	4.45
Total count, lactic acid bacteria x 10^5	389	1605	2592	3112	3411	3400	2915
D.giganteus							
pH	5.49	3.96	3.56	3.46	3.43	3.49	3.52
Titratable acid expressed as lactic acid equivalent(%)	0.02	0.56	0.96	1.12	1.25	1.21	1.23
HCN release in mg/100g/24 hr.	0.41	4.60	6.82	8.73	9.24	8.63	8.22
Total count, lactic acid bacteria x 10^5	350	1521	2698	3791	3764	3642	3058

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