PART III

NOTES AND ABSTRACTS

NOTES

COMPARATIVE EFFICIENCY OF DIFFERENT GLAZES FOR FROZEN PRAWNS OF COMMERCE

Though water is the most common glaze in the preparation of block frozen prawns in India, some processors use a salt sugar solution or no glaze at all in frozen packs for export. The volume of glaze varies greatly and the usual practice is to add the glaze before freezing till the prawns are just covered. This note reports the results of studies carried out on the effect of these different glazes on the biochemical, bacteriological and organoleptic quality of prawns during frozen storage.

Prawns caught by mechanised vessels off Cochin were quick frozen in 450 g blocks as headless shell-on (HL), peeled and devened (P&D) and cooked (CPD) forms without any glaze, with water as glaze and with a solution of a mixture of 0.5% common salt and 0.5% cane sugar. The volume of glaze was 100 ml for HL, 50 ml for P&D and 150 ml for cooked prawns. They were stored at -23°C and analysed at regular intervals for thawed yield, moisture, water extractable nitrogen (WEN), non protein nitrogen (NPN), free α-amino nitrogen (α-NH_2-N) and organoleptic characteristics. The organoleptic quality was recorded as preference of the cooked samples by a panel of four members. These studies were further carried out under commercial conditions with emphasis on the bacterial quality of the final products.

Even though three sets each of HL, P&D and CPD prawns were studied only one set of typical results on CPD prawns is presented in Table I while Table II gives the results of statistical analysis of the data on bacterial counts collected under commercial conditions with the unglazed and differently glazed prawns of the three types immediately after freezieg.

Thawed yield does not show any difference among the samples initially but gradual reduction is observed with storage due to fall in moisture and increase in thaw drip loss. WEN, NPN and α-NH_2-N contents are less in glazed samples than in unglazed ones due to higher degree of leaching by the glaze water. During storage WEN shows a continuous decrease in CPD prawn probably due to its high drip loss while in HL and P&D prawn there is an average increase of slightly less than 5% after adjusting the values for experimental error and reduction in moisture. Initial levels of α-NH_2-N and NPN (α-NH_2-N for HL, P&D and CPD are 219, 126 and 33 mg% and NPN 670, 331 and 145 mg% respectively) in all the samples are more

TABLE I BIOCHEMICAL AND ORGANOLEPTIC CHANGES IN COOKED PRAWNS SOLUTION GLAZES DURING

Storage period (days)	Thawed yield %			Moisture %			WEN: mg %			NPN: mg %		
	1	2	3	1	2	3	1	2	3	1	2	3
0	100	100	100	77.9	79.5	78.7	387	358	327	167	144	134
60	99	99	99	77.8	79.1	77.9	359	326	323	175	143	133
120	96	96	96	77.7	79.1	77.6	328	326	319	165	143	129
180	95	96	96	77.0	79.1	77.9	286	279	287	173	136	125
240	94	95	95	76.8	78.9	77.8	290	254	237	166	140	131

TABLE II ANALYSIS OF VARIANCE OF THE DATA ON BACTERIAL COUNTS OF PRAWNS FROZEN WITHOUT GLAZE, WITH WATER AND SALT-SUGAR SOLUTION GLAZES

	Standard Plate count *			*Streptococcus faecalis* *			*Escherichia Coli* +		
Source	SS	DF	MS	SS	DF	MS	SS	DF	MS
Total	134.6504	89		147.6171	77		614118.00	83	
Blocks	0.2259	2	0.11295	0.2259	2	0.1276	4042.93	2	2021.47
Replicaions	130.5300	29	4.50103 ++	136.8022	25	5 4721 ++	469766.67	27	17398.76
Error	3.8945	58	0.06715	10.5597	50	0.2112	140308.40	54	2598.30

++ Significant at 1% levelt * Logarethmic values taken for analysis

or less retained during storage irrespective of the type and nature of packs: However α-NH_2-N content of CPD frozen prawn is lower than that of HL and P&D prawn:

In unglazed samples the colour and texture deteriorated within two months while the sample glazed with salt-sugar solution was acceptable even after eight months. The superior flavour characteristics of the salt-sugar glazed sample without showing significant difference in the biochemical characteristics suggest that it may be only due to the sweetness imparted by the sugar. The unglazed sample is more exposed to the atmosphere causing more oxidation of the pigments and dehydration resulting in discolouration and toughness of the tissue.

Statistical analysis of the results on bacterial counts of the unglazed and differently glazed types shows that there is no significant difference in the bacterial counts among the blocks immediately after freezing.

It is concluded from these studies that for short term storage (less than 2 months) of prawn, freezing without glaze is preferable while for long storage glazing Is essential and that glazing with a salt-sugar solution is superior to ordinary water glaze in overall quality.

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(M. dobsoni) FROZEN WITHOUT GLAZE, WITH WATER AND SALT-SUGAR
FROZEN STORAGE

α-NH_2-N: mg %			Taste panel preference			
1	2	3	Colour	Texture	Flavour	Overall
37.8	29.6	30.8	1—3—2	1—3—2	1—3—2	1—3—2
39.4	26.3	27.8	1—3—2	1—3—2	1—3—2	1—3—2
38.2	33.8	30.5	3—1—2	2—3—1	1—3—2	3—1—2
40.1	29.4	32 9	3—1—2	2—3—1	3—1—2	3—1—2
41.3	30.1	31.5	3—1—2	2—3—1	3—1—2	3—1—2

1=Without glaze 2=Glazed with water 3=Glazed with salt-sugar solution