Studies on Individually Quick Frozen and Block Frozen Prawns

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Freezing of prawns as blocks for export is an established industry in India. Recently the demand for individually frozen prawns has increased in foreign market. To meet this demand spiral freezers have been procured by many prawn freezing factories. The overall quality of the products frozen individually is not reported. So it is felt necessary to evaluate the quality of the prawns frozen individually as compared to the block frozen prawns (-40°C) in contact plate freezer.

Fresh prawns *(Metapenaeus affinis)* were brought to the laboratory under ice and peeled. The peeled and undeveined (PUD) prawns (100-200 nos/kg) were washed and kept in ice. After 12h one kg blocks were prepared from half of the PUD prawns along with 125 ml glaze water and frozen in contact plate freezer. Remaining prawns were individually frozen in mini spiral freezer and glazed and one kg of the samples were packed in each polythene bags and sealed. Both the block frozen and individually frozen samples were stored at -18°C.

Moisture, total nitrogen and non-protein nitrogen (AOAC,1975), salt solublé protein (Ironside & Love, 1958), total volatile base nitrogen (Conway, 1947), α amino nitrogen (Pope & Stevens, 1939) and total bacterial count by the standard pour plate method were determined. Drip loss was measured as percentage of loss of initial weight on thawing. Organoleptic analysis of thawed prawn was carried out by boiling it in 2 % brine for 10 min. The cooked samples were scored by the taste panel on a nine point hedonic scale.

The α amino nitrogen, salt soluble protein, moisture and total bacterial count decreased while total volatile base nitrogen increased in both the samples during storage (Table 1).

Similar trends were observed in frozen prawns by Pillai *et al.* (1961) and Lakshmi

Table1. *Storage characteristics of IQF and Block Frozen Prawns*

Storage period, weeks	Moisture, %		Salt soluble protein, %		NPN, mg%		α amino–N, mg%		Drip loss % by wt		TVBN, mg%		Total bacterial count/g		Organoleptic score	
Before freezing	82.58		12.2		584.6		162.7		6		12.68		$9.1x10^4$		9.0	
	I	P	I	P	I	P	I	P	I	P	I	P	I	P	I	P
0	81.45	81.38	10.65	11.02	599.7	586.3	133.2	135.0	6.9	6.3	11.90	12.10	$4.9X10^4$	$5.1X10^4$	8.5	8.5
2	80.84	80.95	10.23	10.61	603.1	598.2	127.5	130.0	-	-	12.10	12.00	$4.6X10^4$	$4.5X10^4$	8..5	8..5
6	80.89	80.92	9.98	10.35	582.6	574.5	129.5	123.0	7.8	7.3	12.35	12.58	$3.6X10^4$	$3.7X10^4$	8.5	8.0
13	80.60	80.65	9.52	9.85	583.7	595.3	116.2	115.0	8.9	8.4	13.28	13.30	$2.9X10^4$	$2.7X10^4$	-	-
18	80.42	80.65	8.92	9.27	585.4	587.2	109.0	107.2	-	-	14.10	13.96	$1.3X10^4$	$1.1X10^4$	7..5	7..5
22	80.36	80.38	8.48	8.83	574.3	574.4	101.0	102.5	10.1	9.4	14.68	14.70	$9.8X10^4$	$9.9X10^4$	7.5	7.5

I = Individually Quick Frozen; P = Block Frozen in contact plate freezer

et al. (1962). The gradual decreases in salt soluble protein in both the samples as storage period progresses might be attributed to denaturation of actomyosin (Dyer,1971). The differences in the values of these parameters between the two samples were not significant (P>0.05). No difference was detected in the organoleptic quality of the prawns during the 22 weeks storage. The data indicate that quality of the IQF samples is no way better than the block frozen samples after 22 weeks storage.

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