FREEZING TIME AND THAWING LOSSES OF BLOCK FROZEN SHRIMP MEAT

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INTRODUCTION

HORIZONTAL contact plate freezers are generally employed in our shrimp-freezing factories. The freezing time for the standard shrimp block in these freezers is nearly three hours. Recently some of the freezers were modified to reduce freezing time to half. In some factories even new freezers capable of freezing shrimps as blocks in 90 minutes were also installed. It is claimed that freezing in 90 minutes reduces thaw drip. Hence a study was carried out to assess the extent of thawing losses from shrimp meat frozen in the 90 minute freezers.

MATERIALS AND METHODS

Metapenaeus dobsoni meat 300-500 per pound collected from a local shrimp-freezing factory was used in this study. Frozen blocks of shrimp meat were prepared in 90 and 180 minute freezers The weight of shrimp meat in each block was 2. 2 kg. In-carton freezing was followed. Cold water was added as glaze before freezing. The frozen blocks were packed in master cases and stored at -18° C. Triplicate samples from each lot were thawed after 2 days of freezing and at definite intervals of storage upto 6 months. Each block was thawed in running water at room temperature after securing it in airtight polythene bag. The material was weighed after draining for 2 minutes (CAC/RS 92/1976).

RESULTS AND DISCUSSION

Thawing losses from shrimp meat frozen in 90 and 180 minutes are shown in Table 1. These results show that the thawing losses are the same irrespective of the freezing time. It is noted that at any point in the storage period, the thawing losses are the same for the materials frozen in 90 and 180 minutes. It is generally accepted that slow freezing results in larger losses of thaw drip from seafoods than quick freezing (Heen & Karsti, 1965). However in the normal ranges of freezing rates used commercially drip is practically independent of the freezing rate (Jul, 1984). The results of this study confirm this in shrimp meat also. The results presented here also show that in the early part of the storage period there is increased drip loss whereafter it remains almost constant. This has also been reported by other workers (Dyer, 1969). It has been observed in various storage studies of frozen shrimp meat that the thawing losses reach the maximum after varying periods (Mathen & Thomas, 1986) and it may be due to factors like initial quality,

storage temperature, size grade etc. It has been already observed that thaw drip from frozen shrimp meat immediately after freezing is mainly due to the release of water imbibed during handling, preservation and processing of the raw material (Mathen & Thomas, unpublished).

SUMMARY:

Freezing of shrimp meat as blocks in 90 minutes does not result in lesser thawing losses either immediately after freezing or during frozen storage at -18° C.

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Table 1.

THAWING LOSSES FROM 2.2 KG. SHZIMP MEAT BLOCKS FROZEN IN 90 AND 180 MINUTES

Storage Period (days)	Thawing losses* (percent)	
	Freezing time 90 mts	Freezing time 180 mts
2	11.7	11.3
15	13.3	12.4
30	14.6	14.3
60	13.6	13 0
90	14.7	14.7
120	13.1	13.8
180	15.2	14.1
Average	13.7	13.4

* Each value is the average of three blocks.