

Canning of Squid

P. R. G. VARMA* and JOSE JOSEPH*

Veraval Research Centre of Central Institute of Fisheries Technology, Veraval-362 265

A simple method for canning squid (*Loligo sp.*) is discussed. Hot blanching the dressed meat in 7% brine containing 0.2% citric acid for 5 min, packing and subsequent filling with 2% brine containing 0.2% citric acid and processing at 1.0 kg/cm² steam for 20 min gave an excellent canned product with good shelf-life.

Squid (*Loligo sp.*) is caught in very large quantities in our country. Recently there has been an upward trend in the export of frozen squid (Table 1). Jose Joseph *et al.* (1977) have studied in detail the changes in the quality of squid meat during iced and frozen storage. The present paper describes a method by which squid meat can be canned and preserved for a long time.

Materials and Methods

Squids soon after collection were immediately iced and brought to the laboratory, beheaded, gutted, skinned and the meat thoroughly washed in potable water, hot blanched in brine, cut into ring forms, packed in SR lacquered cans (301 x 206), filled with brine, exhausted, seamed and sterilized at 1.0 kg/cm² steam and cooled in potable water. After surface drying, the cans were stored at room temperature. The sterility of the canned product was determined using thioglycollate test, as described in Difco Manual (1971). The cans were drawn periodically and were analysed for organoleptic characteristics to assess its shelf-life.

Results and Discussion

Initial trials of blanching with different concentrations of brine showed that the use of 7% brine gave an acceptable salty flavour to the blanched meat. Increase of brine concentration above that limit imparted too much salty taste, 7% brine was fixed as the optimum brine concentration. Varma *et al.* (1969) observed that constancy in drained weight can be obtained by adjusting the blanching time. Therefore different blan-

ching times, 3, 5 and 7 min were tried to get a canned product with constant drained weight. With 3 min blanching there was a decrease in drained weight. Moreover the filled brine showed some turbidity due to the release of some soluble proteins from the meat during subsequent processing. But with 5 min blanching, the drained weight remained constant and the filled brine cleared. With further increase in blanching time, drained weight increased owing to the initial over-blanching of the meat. Processing at 1.0 kg/cm² steam resulted in a commercially sterile product as determined by the thioglycollate test.

Table 2 presents the changes in the canned product during storage at room temperature. This product had a slight soft texture. The texture improved by incorporating an optimum level of 0.2% citric acid in blanching brine. Another defect noticed during storage was blackening of the meat, and was prevented by incorporating citric acid in filled brine. The same phenomenon has

Table 1. Export of frozen squid/cuttle fish from India*

	Quantity Tonnes	Value Lakhs of rupees
1973	14	1.90
1974	141	19.79
1975	1017	290.72
1976	648	133.34
1977	607	65.01
1978	2427	326.80
1979	2107	280.30

*Based on 'Statistics of Marine Products Exports'
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*Present address: Central Institute of Fisheries Technology, Cochin-682 029

Table 2. *Organoleptic characteristics of canned squid during storage at ambient temperature*

Organoleptic characteristics	Immediately after canning		After storage at room temperature for 1 year	
	Without citric acid	With citric acid	Without citric acid	With citric acid
Colour	Good	Good	Poor, blackened	Good, no blackening
Flavour	Good	Good	Poor	Fair
Texture	Fair, slightly soft	Good	Rubbery	Fair

Table 3. *Intensity of blackening in canned squid during storage at ambient temperature*

Period of storage months	Squid meat packed in brine	
	With citric acid	Without citric acid
0	No blackening	No blackening
1	"	"
2	"	Appearance of black spots
4	"	Very slight blackening
6	"	Slight blackening
10	"	More blackening
12	"	More blackening

been observed by Nandakumaran *et al.* (1970) in canned prawns. An optimum level of 0.2% citric acid in the filling brine was found to be necessary to maintain a titrable acidity of 0.1–0.15% in the final product which will prevent blackening.

Blackening was noticed in squid, canned without any citric acid from the second month of storage and the intensity of blackening increased with increased storage period (Table 3).

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