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Research Note

Ice Storage Studies of Jawla (*Acetes spp.*)

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Non penaeid prawns constitute about 20% of the total marine prawn landings of India of which *Acetes* spp. (Jawla) constitute about 98% (Deshmukh,1994). Very small size, highly perishable nature and rapid autolysis (Sherekar *et.al*, 1997) make this prawn unfit for human consumption in fresh form. Hence it is mainly used for manufacturing fishmeal; a very small quantity is being utilized for drying. The present study is on the ice storage characteristics of acetes packed in polythene bag and in muslin cloth.

Fresh *acetes* collected onboard was immediately brought to the laboratory, washed with potable water and divided into two lots. The prawn was pre cooled to 4° C and 500g each was packed in polythene bags of thickness 275 micron (lot A) and the other lot (lot B) of 500 g each was packed in muslin cloth bags of 180 mesh/cm^2. Both the lots were stored in ice in insulated containers. All the analyses were carried out with whole prawn. Weighing of the iced samples was done after draining in a muslin cloth for 10 min. Moisture, total nitrogen, ash and fat were determined by AOAC (1995) methods and TVBN by micro diffusion method of Conway (1947) using trichloro acetic acid extract. The samples for the sensory studies were cooked in 2% brine for 3 min. A trained taste panel consisting of 10 members conducted organoleptic evaluation. Overall acceptability was determined on 9 point hedonic scale, 9 being extremely good and 4 as the acceptability limit. Bacteriological analysis was carried out as per APHA (1976).

Drained weight and moisture during storage of the samples are given in Table 1. A considerable reduction in weight was observed during storage and the loss was more in lot B. The high weight loss and high increase in moisture content could be attributed to the direct contact of lot B in melting ice.

Table 1. Changes in weight and moisture content of *acetes* spp. during storage in ice.

Days of storage	Weight (%)		Moisture (%)	
	Lot A	Lot B	Lot A	Lot B
0	100	100	79.7	79.7
1	99.0	94.4	81.1	85.4
2	95.0	87.8	80.9	86.3
4	92.6	81.4	81.7	89.1
6	91.8	78.8	81.4	86.9
7	90.0	76.0	80.5	88.1
8	90.4	72.4	79.8	87.1
9	90.0	72.0	79.7	87.8

Biochemical quality changes during iced storage are given in Table 2. The samples in lot B showed significant decrease in all chemical parameters studied compared to lot A. This may be attributed to the direct contact of the sample in lot B with melting ice. The TVBN showed an increase in Lot A while it showed a reduction in lot B.

Bacteriological changes and sensory score of the samples are given in Table 3. The bacteriological examination showed an initial decline of the total count and then a gradual increase in both the samples. In lot

Table 2. Biochemical quality changes of *Acetes* stored in Ice.

Days	TN (%)		NPN (%)		WSN(%)		TVBN (mg%)		Ash (%)	
	Lot A	Lot B	Lot A	Lot B	Lot A	Lot B	Lot A	Lot B	Lot A	Lot B
0	2.75	2.75	0.83	0.83	1.78	1.78	14.05	14.05	3.24	3.24
1	2.69	1.78	0.75	0.27	1.32	0.75	16.31	9.89	2.65	1.19
2	2.47	1.45	0.78	0.17	1.25	0.19	21.89	6.59	2.68	1.78
4	2.26	1.46	0.86	0.18	1.15	0.36	19.69	5.27	2.90	1.73
6	2.28	1.50	0.83	0.12	1.46	0.33	19.19	4.39	2.74	2.06
7	2.30	1.32	0.97	0.14	1.42	0.17	24.72	4.49	2.77	1.76
8	2.27	1.40	0.91	0.11	1.41	0.25	27.29	3.23	2.92	1.94
9	2.30	1.33	1.01	0.07	1.45	0.29	29.03	2.79	3.52	1.14

B the count was less, which could be due to washing off due to ice melt water. Other pathogens like staphylococcus and E.coli were not detected during the study. Throughout the storage period the total plate count was higher in Lot A than in B.

On sensory evaluations lot A had retained most of the original characteristics for four days after which the sample developed off odour. The score of sample A decreased from 8.5 to 4.0 and remained in acceptable level upto 9 days. It had developed faint off odour, which could be due to the retaining of spoilage compounds formed. In lot B, there was sharp decline in the original sensory characteristics. After two days of storage the samples lost the original characteristics and developed a bland odour and fibrous texture. The cooked samples retained the characteristics up to 4 days of storage. The samples showed no blackening during iced storage.

Table 3. Changes in bacterial counts and Sensory score of *Acetes* during ice storage.

Days	TPC/g		Sensory score	
	(Lot A)	(Lot B)	(Lot A)	(Lot B)
0	4.0×10^4	4.0×10^4	8.5	8.5
1	6.0×10^3	3.3×10^3	8.0	7.0
2	2.1×10^4	4.7×10^3	7.5	5.5
4	6.2×10^4	5.2×10^3	6.0	4.0
6	2.0×10^5	1.1×10^4	5.5	2.5
7	4.2×10^5	3.2×10^4	5.0	-
8	6.2×10^5	3.2×10^4	4.0	-
9	7.9×10^5	—	4.0	-

The above study showed that *Acetes* packed in polythene bags (lot A) remained in acceptable condition up to 9 days in ice, whereas samples packed in muslin cloth (lot B) remained in good condition up to 4 days. Since the samples packed in muslin cloth had very short storage life, it is evident that this species cannot be stored in direct contact in ice.

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