

## Utilization of Jawla (*Acetes spp*)

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Dried jawla (*Acetes spp*) was processed in the laboratory and its chemical and bacteriological qualities were compared with those of commercial samples. Both products were bacteriologically sound but the latter was contaminated with extraneous matter. Various products like wafer, soup powder, cutlet, spiral and squid stuffed with jawla were prepared and their sensory qualities were evaluated. The studies showed that all products were acceptable.

**Key words:** Jawla, product development

*Acetes spp.* (locally known as jawla) is a small non-penaeid shrimp landed in substantial quantities along the Maharashtra and Gujarat coasts. In Gujarat the peak season is January to March. Landings of non-penaeid shrimp in 1996-97 in Gujarat was 67378 t (Deshmukh and Dineshbabu, 1997) of which 99% was constituted by jawla. Because of the small size and the large quantity landed not much care is taken in its handling and processing. Very little work has been done on the nutritional quality and product development. Garg *et. al.* (1977), Mulbagil *et. al.* (1980) and Valsan *et. al.* (1985) have studied various quality aspects of jawla. It has been indicated that there is a potential market for jawla and its products (Deshmukh, 1994). Most of the jawla is utilised for making fish meal and a small portion from boats undertaking daily trip is dried and marketed in Northeast states. Results of a study to develop processes for dried jawla and other value added products are discussed in this paper.

### Materials and Methods

Fresh jawla was collected from the landings at Veraval. It was washed thoroughly in potable water and divided into two lots. One lot was sun dried. Both fresh and dried samples were analysed for chemical and bacteriological parameters. Commercial samples of dried jawla were collected and analysed similarly. Moisture, total nitrogen, ash and fat were determined by AOAC (1984) methods and TVBN by microdiffusion method of Conway (1947). Bacteriological analysis was carried out as per APHA (1976) methods.

Meat was separated from the second lot using a Baadar meat bone separator and used as the base material for preparation of cutlet, soup powder, wafer, spiral and squid stuffed with jawla. Cutlets were prepared as per the method described by Joseph *et. al.* (1984) replacing fish meat with jawla meat at 100, 75, 50 and 25% levels and one sample containing only dhoma (*Johnius sp*) meat (samples A, B, C, D and E respectively) along with other ingredients. Wafer and soup powder were prepared according to the

methods described by Shenoy *et al.* (1983a, 1983b). Squid tubes from baby squid were cooked in 3% boiling brine for 5 min. It was then stuffed with ingredients described by Joseph *et al.* (1984) using jawla meat in place of fish meat. It was battered, breaded, flash fried and stored at  $-20^{\circ}\text{C}$ . Spirals were prepared by mixing cooked jawla meat with ingredients shown in Table 1 and sufficient quantity of water. It was ground well and extruded as spiral, fried, packed in polythene bags and stored at room temperature. Taste panel studies were carried out by 10 trained panelists.

**Table 1.** Recipe for jawla spiral

Ingredients	Wt.
Cooked jawla meat	250 g
Rice flour	630 g
Sodium bicarbonate	5 g
Sesame	10 g
Oil	85 ml

### Results and Discussion

Protein content in fresh jawla was 14.68, fat 0.6 and ash 6.6%. Laboratory samples of dried jawla had good appearance whereas the commercial samples were less attractive and contaminated with extraneous materials like small twigs, small fishes, shells and sand. Chemical parameters of commercial and laboratory dried jawla samples are given in Table 2. The commercial samples had higher moisture compared to laboratory samples. Both were bacteriologically sound. They had total plate counts of  $5.74 \times 10^2$  and  $3.4 \times 10^3$  respectively. No pathogenic bacteria like *Salmonella* spp., *Vibrio* spp., *E. coli*, staphylococcus and streptococcus were detected.

**Table 2.** Chemical composition of dried jawla

	Laboratory sample	Commercial sample
Moisture, %	10.4	17.10
Crude protein, %	61.9	56.34
Fat (DWB) %	4.2	2.35
Ash (DWB) %	11.9	13.01
TVBN mg/100 g	52.19	57.24

The mean panel scores for cutlet showed that samples A, B and C with 50% or more jawla were highly acceptable with an overall score of 7 while sample D with 25% jawla had a score of 5.2 and E, cutlet with dhoma alone, 4.3. The mean panel scores of jawla products are given in Table 3. It is observed that wafer, spiral, soup powder and stuffed squid also had good overall acceptability.

Based on the above results, it is noted that improvements are needed in commercial processing of dried jawla. Products with good acceptability could also be processed using fresh jawla.

**Table 3.** Mean panel scores for various jawla products

Product name/ Attributes	Wafers	Spirals	Soup powder	Squid stuffed with jawla	Jawla cutlet
Appearance	6.2	7.2	6.1	7.5	-
Colour	6.3	7.1	6.3	7.6	-
Odour	6.5	7.5	6.5	7.5	-
Flavour	6.8	7.4	6.4	7.6	6.8
Texture	6.9	7.3	—	7.6	6.9
Overall Acceptance	6.6	7.4	6.4	7.6	7.1

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