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PROCESSING AND QUALITY REQUIREMENTS OF *BECHE-DE-MER*

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ABTRACT

This paper deals with processing, composition, common quality defects, export specifications, suggestions for improvement in the processing and finally precautions to be taken during processing.

INTRODUCTION

Beche-de-mer is the commercial name for cured holothurians, commonly known as sea-cucumbers. In India, the *beche-de-mer* industry depends almost on a single species *viz. Holothuria scabra* found in the Gulf of Mannar, Palk Bay, Andaman and Nicobar Islands, Lakshadweep and also in the Gulf of Kutch. The animal usually burrows in sandy or muddy bottom and feed on the nutritive material contained in it.

EXPORT OF BECHE-DE-MER

Beche-de-mer industry of India is exclusively an export-oriented industry. Bulk of the export from India goes to Singapore. The export of *beche-de-mer* in 1973 was only 29 tonnes valued at Rs. 2.48 lakhs. From 1974 onwards an increase in the export of this commodity was noticed. Maximum export (Quantity-wise) was noted in 1975 and the maximum earnings by way of foreign exchange was in 1986 (Anon., 1986). Table 1 shows yearwise export of *beche-de-mer* from India.

During recent years, the price of *beche-de-mer* has considerably increased from US $ 2.95 for 17 pc/kg in 1974 to US $ 16.00 in 1985 (James, 1986).

PROCESSING

Processing of *beche-de-mer* is simple and involves the following steps :

1. Thorough evisceration before boiling.
2. Boiling without the addition of water till the animals shrink to half of their length and emit a distinctive cooked odour.
3. Burial in damp sand for 12 to 18 hours.
4. Removal of the chalky external coat.
5. A second boiling in sea water for 20 minutes.
6. Full drying upon wire net trays raised above the ground or half-sun drying.

Size : Size is the most important criterion to fix the quality. The first grade quality is above 12 cm when processed. Longer and stouter ones fetch higher prices than shorter and leaner ones. Sea-cucumbers usually shrink to one third of their original size during processing.

Appearance : The appearance of the product should be neat and free from dirt and sand and also from white chalky deposits. Those which are having markings and leisons on the skin fetch low price.

Shape : This depends upon the species used. Neat and cylindirical forms are preferred.

Colour : If dark coloured products are matched against light coloured products, traders pick the former in preference to the latter as consumers believe that darker ones are the true sea-cucumbers.

Odour : Clean and thoroughly dried product has no odour at all. Care has to be taken to maintain

moisture content around 8 to 10%. The product is hygroscopic and absorbs moisture thereby emitting a foul and offensive smell. This can be avoided by thorough drying and packing in polythene bags.

The proximate composition of *beche-de-mer* is given below :

	Durairaj (1982)	Shenoy (1977)	Jacob (1973)
Moisture %	15	27	22
Crude protein %	65	43	35 - 82
Ash %	11	21	15 - 30
Fat %	1	2	Traces
Insoluble ash %	Below 0.5	7	-

COMMON QUALITY DEFECTS

Sandy *beche-de-mer* : The external sand sticking to *beche-de-mer* is below 0.5%. But, due to faulty processing, sand content goes upto 50 to 60%. Such specimens are called sandy *beche-de-mer*.

Imperfect removal of chalky external coat.

Careless and inadequate sun-drying.

Absorption of moisture during storage and action of fermentative micro-organisms.

The quantity of *beche-de-mer* inspected and rejected by the Export Inspection Agency (Madras) is given below (private communication).

Year	Quantity inspected Kg	Quantity rejected Kg
1986	51817	3046
1987	32213	1155

Reasons for the rejection are (i) Non-conformity with declaration, (ii) mixing of under-sized grades and (iii) excess of white pigment.

EXPORT SPECIFICATIONS FOR *BECHE-DE-MER*

Dried *beche-de-mer* is a notified fish item which comes under the purview of Export (Quality Control and Inspection) Act of 1963. However, as processing of *beche-de-mer* is even now carried out on a cottage industry level, a detailed inspection is not undertaken at the moment. The specifications prescribed by Export Inspection Agency are given below :

Size grades : 10 cm and above
7.5 cm to 10 cm
5 cm to 7.5 cm
Below 5 cm

Specifications

Size : Export of size grades below 3 inches is banned.

Colour : Dark brown to black on the dorsal side and pale white on the ventral side.

Odour : Characteristic odour of the species and shall be free from any off odour.

General characteristics : Dried *beche-de-mer* shall be prepared from the species *Holothuria scabra*. The material shall be properly dried and free from fungal, insect and mite infestation. It shall be free from visible contamination. The product shall have characteristic shape.

SUGGESTIONS FOR IMPROVEMENT

Handling the catch on board is foremost in improving the market value of the product. James (1986) has given certain suggestions to improve the quality of *beche-de-mer*.

Improvements in handling

a. As soon as the sea-cucumbers are taken onboard a slit of 2 to 3 cm is made near the cloaca and eviscerated properly. This enables the final product to remain neat and clean.

b. The sea-cucumbers shall not be kept over palm leaf woven baskets and net bags in order to avoid marks and impressions on the outer flesh. It is best to keep sea-cucumbers in a plastic fish box having a smooth interior surface and drain holes of 1 cm diameter or less.

c. After capture, the sea-cucumbers should not be exposed to sun since the top layer of the animal dries up and starts peeling off.

d. As far as possible, the animals shall be processed soon after they are brought to the shore. Delayed processing may result in the development of leisons on the outer skin of the body wall.

Precautions During Processing

A number of precautionns have to be taken during processing to ensure a high quality product (James, 1986).

1. If the animals are kept in sea water in boiling pans and heated, the animals first consume water and become swollen. It has the capacity to close its mouth and cloaca while being heated and effectively seal both the openings. Heating causes both the outside and inside water of the animal to boil. Pressure builds up inside the body and the body wall bursts. On the other hand, if the animals are introduced after the water boils, they are killed quickly in a few seconds. Bursting can thus be avoided and the resultant product will have a cylindrical shape which is the most preferred in the market.

2. Cleaning after cooking is very important. Fine mud get embedded into the outer body wall of the dorsal and ventral surfaces. These have to be removed to have an acceptable product for the market.

3. Duration of keeping the sea-cucumbers inside pits is an important factor. If kept for a longer period, the body wall may become too soft for future processing. If the material is not moist at the time of burying, bacterial action may be slow and decomposition may be inadequate.

4. Proper care is necessary in selecting the site for burial. Most beaches near the villages are polluted. Therefore, clean sandy beaches with little human activity are the best sites.

5. Drying of the product shall be on raised platforms and shall be dried to a moisture content of 8 to 10%.

Conclusions

Considering the resources available in the country and the demand for dried *beche-de-mer* in overseas markets, there is good scope for further improving the export trade of this commodity. For a steady export market, there is the need for improving the curing practices of *beche-de-mer* to produce better product. There is every scope for formulating an Indian Standard Specification for dried *beche-de-mer*.

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